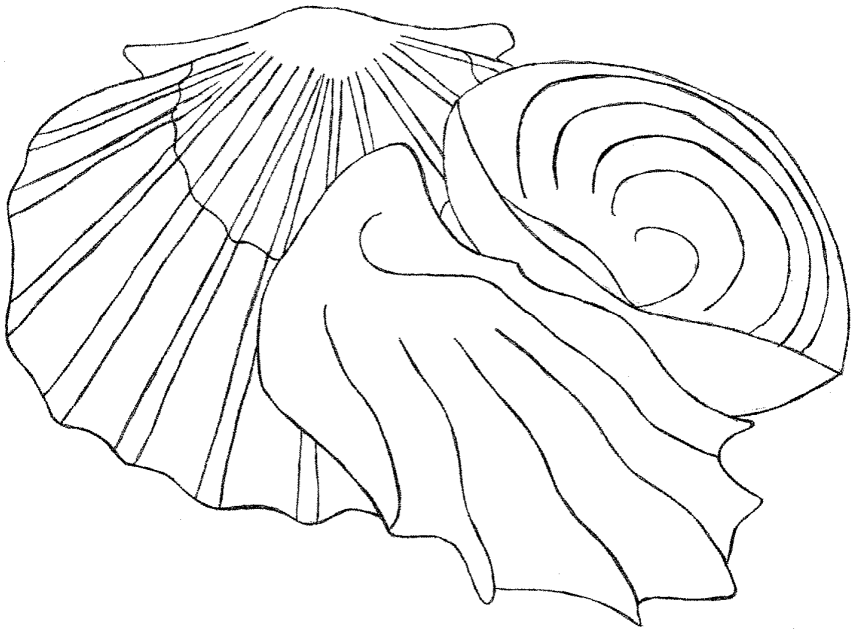
# EAST HAMPTON TOWN

# SHELLFISH HATCHERY



## 2010 AND 2011
## ANNUAL REPORTS
## AND
## 2012 OPERATING PLAN

# East Hampton Town Shellfish Hatchery


**2011 Crew on Three Mile Harbor (left to right): Shelby, Renee, Vito, Kate, Pete, and Barley**

# Annual Report of Operations

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## Mission Statement

With a hatchery on Fort Pond Bay, a nursery on Three Mile Harbor, and a floating raft field growout system in Napeague Harbor, the East Hampton Town Shellfish Hatchery produces large quantities of oyster (*Crassostrea virginica*), clam (*Mercenaria mercenaria*), and bay scallop (*Argopecten irradians*) seed to enhance valuable shellfish stocks in local waterways. Shellfish are available for harvest by all town residents.

The Hatchery operates under a twenty-five year agreement with New York State in which the State receives ten percent of the Hatchery's annual seed production in exchange for initial capital funding. This share is generally disseminated into state waters adjacent to East Hampton. In any given year, alternate arrangements may substitute for this formula.

Cooperative research and experimentation concerning shellfish culture, the subsequent success of seed in the wild, and the status of the resource is undertaken and reported upon regularly, often funded and validated by scientific research grants. Educational opportunities afforded by the work include school group and open house tours and educational displays at community functions.

Annual reporting includes production statistics and values, seed dissemination information, results of research initiatives, a summary of outreach efforts, the status of current and developing infrastructure, and a plan for the following year's operations.

## 2010

| Full-time Staff | Part-time, Contractual and Volunteer |
|---|---|
| John Aldred | Nathan McKenney |
| John “Barley” Dunne | Jennie Rice |
| Jennifer Gaites | Richard Lester |
| Frank Quevedo | Doug Lester |
| | Daniel Ruggiero |
| | Brian Gallaher |
| | Cornell Cooperative Extension – Eelgrass Team |
| | Long Island University – Scallop Research Team |

## 2011

| Full-time Staff | Part-time and Contractual | Volunteers |
|---|---|---|
| John “Barley” Dunne | Jennie Gallaher | Renee LaGarenne |
| Kate Rossi-Snook | Vito Sisti | Alex Cheston |
| Pete Topping | Shelby Joyce | Brian Gallaher |
| | Paul Hamilton | Charles Martin-Shields |
| | Paul Colombo | Long Island University – |
| | Cornell Cooperative Extension – Eelgrass Team | Scallop Research Team |

## Special Thanks to:

John Aldred, Frank Quevedo, and Jennifer Gaites for their many years of dedication to the Shellfish Hatchery – we wish you success and happiness in your current endeavors, wherever they may take you;

Ronn Pirrelli for continuing to work with us to provide the public with informative maps depicting our annual shellfish seed placement.

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## 2010 Annual Report of Operations

**2011 Annual Report of Operations**

## 2010 Season Summary

The Aquaculture department went through some significant staffing changes over the course of 2010. In chronological order: Jennifer Gaites, a Bay Management Specialist with the hatchery since 2003, left in May in order to start a family. John Aldred, the director and builder of the hatchery and its facilities since their inception in the late 1980's retired in October. Frank Quevedo, a Bay Management Specialist with the hatchery since 1997, took a position as the executive director of the South Fork Natural History Museum in Bridgehampton, NY. Nathan McKenney, an Environmental Aide for over two years, now works in a zebrafish lab for Rockefeller University. We thank everyone for their participation in making the hatchery what it is today and sincerely wish them all the best as they begin new chapters in their lives. We will try our best to keep up the good work!

The Montauk hatchery growing season began with the first of four clam spawns on February 23rd, followed by the first of two oyster spawns on March 9th. For further dates and specific spawn information, see the appropriate sections below. Worth noting is the fact that the first clam spawn made it through the hatchery and nursery without incident. The remaining three clam spawns exhibited typical survival/mortality in the hatchery and nursery. The oyster and scallop spawns and sets were typical.

Overall, 6.1 million oysters were seeded and/or overwintered. Total value of marketable oysters was $250,000. Six million clams were seeded and/or overwintered, with a total value of marketable clams of $174,000. We overwintered 340,000 scallops to be retrieved and seeded into sanctuaries in 2011. Total market value of bay scallops produced was $20,000 (this includes 2009 cohort seeded and 2010 production seeded but not the 340,000 overwintered, they will be valued at time of seeding in 2011).

With regard to clam overwintering in Northwest Creek, 2009-2010 was the first year overwintering occurred entirely in Northwest Creek. Three of ten strings were placed on the hard flat and the remaining seven strings were placed in the mud south of the flat. Unfortunately, many bags went missing, presumed stolen, during the overwintering period between 2009 and 2010 (see data below). Intuitively, the clams that were placed on the flat exhibited much lower survival (22%) than those placed on muddy bottom (69%). For the 2010-2011 overwintering period, 1.29 million clams were overwintered, all on muddy bottom, in Northwest Creek.

In all, approximately 12 million seed shellfish (valued at over $450,000), including those overwintered, were produced and seeded into East Hampton waters in 2010.

The Three Year Bay Scallop Restoration Project continued with another increase in spatfall numbers and continued monitoring of survival and gonad maturation of scallops in three sanctuaries.

# Oyster Production

## Oyster Spawn and Culture Summary

| | Oy1 Cohort | | Oy2 Cohort | |
|---|---|---|---|---|
| | **Dates** | **# Oysters ($x10^6$)** | **Dates** | **# Oysters ($x10^6$)** |
| **Spawn** | 3/9/10 | 118.40 | 4/15/10 | 217.10 |
| **First to Set** | 3/24/10 | 20.50 | 5/3/10 | 8.98 |
| **Last to Set** | 3/26/10 | | 5/5/10 | |
| **To Downwelling - Hatchery** | 4/8/10 | 2.79 | 5/17-5/19 | 2.17 |
| **Set Success** | 14% | | 24% | |
| **To Upwelling - Nursery** | 4/28-5/14 | 3.41 | 5/21-6/9 | 2.77 |

| | All Cohorts | |
|---|---|---|
| | **Dates** | **# Oysters ($x10^6$)** |
| **Total to Upwelling** | 4/28-6/9 | **6.28** |
| **To Field** | 6/25-7/23 | **5.55** |
| **To Seed/Overwintering** | 7/21-10/27 | **6.10** |

## Oyster Hatchery Discards

| Sieve Number | Approximate Size | Total Discards |
|---|---|---|
| 325 | >45µm | 238,300,000 |
| 270 | >53µm | 36,700,000 |
| 230 | >63µm | 107,500,000 |
| 200 | >75µm | 28,000,000 |
| 170 | >90µm | 40,400,000 |
| 140 | >106µm | 18,675,000 |
| 120 | >125µm | 1,500,000 |
| 100 | >150µm | 17,850,000 |
| 80 | >180µm | *1,400,000* |
| 70 | >212µm | *1,100,000* |
| **TOTAL: 491,430,000** | | |
| ***Marketable Total: 2,500,000*** | | |

## Oyster Nursery Discards and Culls

There were no oyster nursery discards or culls recorded for the 2010 season.

**Distribution of Oyster Seed**

| | Seed | Field Culls | Hurricane Preparation | from 2009 Cohort | Totals |
|---|---|---|---|---|---|
| **Accabonac Harbor** | 580,067 | 475,866 | 0 | 0 | **1,055,933** |
| **Hog Creek** | 70,848 | 0 | 0 | 0 | **70,848** |
| **Lake Montauk** | 488,556 | 570,240 | 301,440 | 24,750 | **1,384,986** |
| **Napeague Harbor** | 432,442 | 930,834 | 0 | 84,640 | **1,447,916** |
| **Three Mile Harbor** | 563,274 | 1411950 | 0 | 114,408 | **2,089,632** |
| **Pond of Pines Overwintering** | 0 | 25,830 | 0 | 0 | **25,830** |
| **New York State** | 245,612 | 0 | 0 | 0 | **245,612** |
| **Donations*** | 0 | 500 | 0 | 0 | **500** |
| **Totals** | **2,380,799** | **3,415,220** | **301,450** | **223,798** | **TOTAL: 6,321,267** |

Please refer to Appendix I (page 26) for 2010 Harbor Seeding Maps.

Notes
*500 oysters from field culls were donated to Stephanie Talmage, SUNY Southampton, for research (for more information, see page 13 of the *Cooperative Research* section).

| | Average Size (mm) | Range |
|---|---|---|
| Donations | 8.0 | N/A |
| Overwintering | >3/8" mesh | N/A |
| Field Culls | 22.6 | 6-29 |
| Hurricane Preparation | 31.7 | 31-32 |
| Seed | 32.1 | 28-38 |
| From 2009 Cohort | 34.6 | 31-38 |
| New York State | 34.7 | 33-36 |

**Oyster Overwintering**

| Overall Numbers at Stocking and Retrieval | |
|---|---|
| Oysters stocked 11/17/09 | 263,424 |
| Oysters retrieved 4/9/10 | 233,798 |
| Average survival | 89% |
| Average size stocked | 21mm |

| 2010 Overwinter Stocking | |
|---|---|
| Oysters stocked 10/27/10 | 25,830 |
| Overall average size stocked* | >3/8" mesh |

Notes
*Average size at stocking was not determined in 2010; sieved size for the group at stocking was 3/8".

**Oyster Market Values**

| 2010 Oyster Market Values | | | | | |
|---|---|---|---|---|---|
| **Stage** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| Larvae | >180µm | 2,500,000 | $2.00 | $5,000.00 | **$5,000** |
| Seed | 6.1-8.0<br>20.1-25.0<br>30.1-35.0 | 500<br>3,388,890<br>2,682,249 | $14.33<br>$33.67<br>$45.33 | $7.17<br>$114,092.63<br>$121,595.29 | **$235,695** |
| 2 Year Old Seed (2009 Cohort) | 30.1-35.0 | 223,798 | $45.33 | $10,145.51 | **$10,146** |
| Seeding & Handling | 6.1-35.0 | 6,295,437 | $2.00 | $12,590.87 | **$12,591** |
| **GRAND TOTAL VALUE: $263,432*** | | | | | |

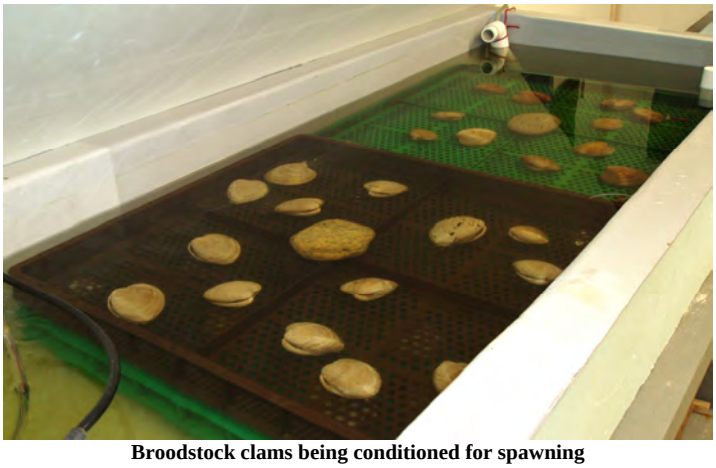
Notes

*Value includes the oysters that were given to New York State, but does not include the oysters that were put into overwintering; overwintered oysters will be valued once they are seeded (ie: 2009 Cohort).

Market Value References

Frank M. Flower Sons Inc., Oyster Bay, NY. 2010 Seed Price List.
Noank Aquaculture Cooperative, Noank, CT and Southold, NY. 2008 Seed Price List.
Sargent's Cove Oyster Hatchery, Darien, CT. 2009 Sargent's Cove Oyster Seed Price List.
Town of Islip Shellfish Culture Facility, Islip, NY. 2010 Shellfish Seed Price List.

## Hard Clam Production



**Broodstock clams being conditioned for spawning**

### Hard Clam Spawn and Culture Summary

| | C1 Cohort | | C2 Cohort | |
|---|---|---|---|---|
| | **Dates** | **# Clams (x10$^6$)** | **Dates** | **# Clams (x10$^6$)** |
| **Spawn** | 2/23/10 | 7.70 | 4/1/10 | 48.5 |
| **First to Set** | 3/5/10 | 1.03 | 4/12/10 | 2.14 |
| **Last to Set** | 3/12/10 | | 4/19/10 | |
| **To Transition Tanks - Hatchery** | 3/26/10 | 2.64 | 4/30-5/10 | 1.25 |
| **To Upwelling - Nursery** | 4/7/10 | 2.40 | 5/6-5/14 | 1.09 |

| | C3 Cohort | | C4 Cohort | |
|---|---|---|---|---|
| | **Dates** | **# Clams (x10$^6$)** | **Dates** | **# Clams (x10$^6$)** |
| **Spawn** | 4/29/10 | 8.2 | 5/11/10 | 13.10 |
| **First to Set** | 5/10/10 | 0.41 | 5/24/10 | 1.56 |
| **Last to Set** | 5/19/10 | | 5/31/10 | |
| **To Transition Tanks - Hatchery** | 5/31-6/2 | 1.05 | 6/7-6/9 | 2.86 |
| **To Upwelling - Nursery** | 6/4/10 | 1.05 | 6/9-6/14 | 3.96 |

| | All Cohorts | |
|---|---|---|
| | **Dates** | **# Clams (x10$^6$)** |
| **Total to Upwelling** | 4/7-6/14 | **8.49** |
| **To Field** | 7/6-7/23 | **9.95** |
| **To Seed/Overwintering** | 7/23-11/16 | **6.03** |

**Hard Clam Hatchery Discards**

| Sieve Number | Approximate Size | Total Discards |
|---|---|---|
| 230 | >63µm | 300,000 |
| 200 | >75µm | 4,900,000 |
| 170 | >90µm | 1,900,000 |
| 140 | >106µm | 25,070,000 |
| 120 | >125µm | 350,000 |
| 100 | >150µm | 1,500,000 |
| 80 | >180µm | *130,000* |
| 70 | >212µm | *911,000* |
| 60 | >250µm | *66,000* |
| 50 | >300µm | *76,500* |
| **TOTAL: 35,200,000** | | |
| ***Marketable Total: 1,183,500*** | | |

**Hard Clam Nursery Discards and Culls**

| Sieve Size | Total |
|---|---|
| <1.7 | 150,000 |
| <1.0-1.0 | 1,254,000 |
| **TOTAL: 1,404,000** | |

**Distribution of Hard Clam Seed**

| | Seed | Field Culls | from 2009 Cohort | Totals |
|---|---|---|---|---|
| **Accabonac Harbor** | 399,840 | 0 | 132,043 | **531,883** |
| **Hog Creek** | 75,840 | 0 | 0 | **75,840** |
| **Lake Montauk** | 652,926 | 1,173,600 | 62,540 | **1,889,066** |
| **Napeague Harbor** | 809,632 | 0 | 98,253 | **907,885** |
| **Three Mile Harbor** | 728,121 | 30,000 | 107,650 | **865,771** |
| **Northwest Creek Overwintering** | 1,292,380 | 0 | 0 | **1,292,380** |
| **New York State** | 337,543 | 240,000 | 0 | **577,543** |
| **Cooperative Research*** | 0 | 285,872 | 0 | **285,872** |
| **Totals** | **4,296,282** | **1,729,472** | **400,486** | **TOTAL: 6,426,240** |

Please refer to Appendix I (page 26) for the 2010 Harbor Seeding Maps.

Notes
*285,872 clams from field culls were distributed to Dr. Chester Zarnoch, Baruch College of CCNY (refer to page 13 of the *Cooperative Research* section for more information).

| | Average Size (mm) | Range |
|---|---|---|
| Field Culls | 7.9 | 6-9 |
| Cooperative Research | 8.0 | 7-9 |
| Overwintering | 12.0 | 11-12 |
| New York State | 14.5 | 9-20 |
| Seed | 14.8 | 11-19 |
| From 2009 Cohort | 18.2 | 9-31 |

**Hard Clam Overwintering**

2009 was the first year of overwintering in Northwest Creek.

| Overall Numbers at Stocking and Retrieval | |
|---|---|
| Clams stocked 9/2/09-9/15/09* | 1,027,324 |
| Clams retrieved 9/20/10-9/29/10 | 400,486 |
| Clams lost due to missing bags** | 216,000 |
| Percent retrieved from original stocking | 39% |

Notes
*Clams were stocked in 2009 on 9 strings at 2,000/bag, and on 1 string (#10) at 2,500/bag. Three overwinter strings were placed on the flat and the remaining seven were placed on the mud bottom south of the flat in Northwest Creek.
**Upon retrieval in 2010, one string was missing all 50 bags, one string was mising 38 bags (12 retrieved), and one string was missing 20 bags (30 retrieved). The actual strings were intact but clips, line and bags were missing indicating that the bags were stolen.

| Average survival | | |
|---|---|---|
| Clams on flat | 22% | Range: 14.4% - 32.1% |
| Clams on mud | 69% | Range: 0.0% - 79.6% |
| Overall survival | 53% | |

| Average Clam Size (mm) | | |
|---|---|---|
| Overall average size stocked | 12.4 | |
| **Retrieval Data** | | |
| Clams on flat | 18.1 | Range: 9-23 |
| Clams on mud | 18.3 | Range: 12-31 |
| Overall average size retrieved | 18.2 | |
| Increase in growth | 47% | |

| 2010 Overwinter Stocking | |
|---|---|
| Clams stocked 9/20/10-9/29/10* | 1,292,380 |
| Average size stocked | 12.0mm |

Notes
*In 2010 overwintered clams were stocked on 6 strings at 2,500/bag, and on 4 strings at 2,700/bag.

**Hard Clam Market Values**

| 2010 Hard Clam Market Values | | | | | |
|---|---|---|---|---|---|
| **Stage** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| Larvae | >180um | 1,183,500 | $2.00 | $2,367.00 | **$2,367** |
| Seed | <1.0-1.0<br><1.7<br>6.1-8.0<br>12.1-16.0 | 1,254,000<br>150,000<br>1,729,472<br>3,003,902 | $3.00<br>$5.00<br>$23.04<br>$36.06 | $3,762.00<br>$750.00<br>$39,849.92<br>$108,307.36 | **$152,669** |
| 2 Year Old Seed (2009 Cohort) | 16.1-20.0 | 400,486 | $46.75 | $18,722.72 | **$18,723** |
| Seeding & Handling | 6.1-20.0 | 5,133,860 | $2.00 | $10,267.72 | **$10,268** |
| **GRAND TOTAL VALUE: $184,027*** | | | | | |

Notes

*Value includes the clams that were given to New York State, but does not include the clams that were put into overwintering; overwintered clams will be valued once they are seeded (ie: 2009 Cohort).

Market Value References

Frank M. Flower Sons Inc., Oyster Bay, NY. 2010 Seed Price List.
Noank Aquaculture Cooperative, Noank, CT and Southold, NY. 2008 Seed Price List.
Town of Islip Shellfish Culture Facility, Islip, NY. 2010 Shellfish Seed Price List. Bay Scallop Production

# Bay Scallop Production

## Bay Scallop Spawn and Culture Summary

| | S1 Cohort | | S2 Cohort | | S3 Cohort | |
|---|---|---|---|---|---|---|
| | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** |
| **Spawn** | 5/28/10 | 6.10 | 6/2/10 | 7.00 | 6/3/10 | 4.3 |
| **To Downwelling - Nusery** | 6/16-6/18 | 0.19 | 6/16-6/18 | 0.44 | 6/18-6/29 | 0.35 |
| | **S4 Cohort** | | **S5 Cohort** | | **S6 Cohort** | |
| | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** |
| **Spawn** | 6/17/10 | N/A | 6/29/10 | N/A | 7/1/10 | N/A |
| **To Downwelling - Nursery** | 6/29-7/5 | 0.09 | 7/12-7/14 | 0.37 | 7/12-7/14 | 0.27 |

| | **All Cohorts** | |
|---|---|---|
| | **Dates** | **# Scallops (x10$^6$)** |
| **Total to Downwelling** | 6/16-7/14 | **1.71** |
| **Total to Upwelling** | 6/24-7/23 | **1.17** |
| **To Field** | 7/23-8/3 | **0.46** |
| **To Overwintering** | 10/25-10/26 | **0.34** |

## Bay Scallop Hatchery Discards

| Sieve Number | Approximate Size | Total Discards |
|---|---|---|
| 170/200 | >75µm->90µm | N/A* |
| 140 | >106µm | N/A* |

Notes
*Number or volumes of discards were not recorded.

## Bay Scallop Nursery Discards and Culls

| | Sieve Size | Total |
|---|---|---|
| **Discards** | 100/120[2] | 300,000 |
| | 70 | *100,000* |
| **Culls** | 50 | *50,000* |
| | 40 | *450,000* |
| **TOTAL: 900,000** | | |
| ***Marketable Total: 600,000*** | | |

**Downwelling system for scallop culture at the Nursery**

**Distribution of Bay Scallop Seed**

| | Seed (2009 Cohort) | Field Culls (2010 Cohort) | Seed (2010 Cohort) | Totals |
|---|---|---|---|---|
| **Lake Montauk** | 0 | 0 | 30,653* | **30,653** |
| **Napeague Sanctuary** | 91,599 | 0 | 0 | **91,599** |
| **Three Mile Harbor** | 1,316 | 0 | 0 | **1,316** |
| **Three Mile Sanctuary** | 91,599 | 0 | 0 | **91,599** |
| **Hand's Creek Sanctuary** | 91,600 | 0 | 0 | **91,600** |
| **Donations*** | 0 | 169,347* | 0 | **169,347** |
| **Totals** | **276,114** | **169,347** | **30,653** | **TOTAL: 476,114** |

Please refer to Appendix I (page 26) for the 2010 Harbor Seeding Maps.

Notes
*200,000 scallops from field culls were distributed to The Nature Conservancy (TNC) for growout on Shelter Island. The Hatchery received 30,653 of those scallops back from TNC after the growout season (seeded to Lake Montauk), therefore it can be deduced that 169,347 scallops were donated.

| | Average Size (mm) | Range |
|---|---|---|
| Donations (to The Nature Conservancy) | 4.0 | 3-5 |
| Seed (from The Nature Conservancy) | 31.2 | 25-37 |
| Seed (from 2009 Cohort)* | N/A* | N/A |

Notes
*Seed size measurements from the 2009 cohort were not taken before seeding.

**Bay Scallop Overwintering**

| Overall Numbers at Stocking and Retrieval | |
|---|---|
| Scallops stocked 10/30/09-11/4/09 | 372,824 |
| Scallops retrieved 4/6/10-4/9/10 | 276,114 |
| Percent survival | 74% |

| 2010 Overwinter Stocking | |
|---|---|
| Scallops stocked 10/25/10-10/26/10 | 336,000 |
| Overall average size stocked | 27.3mm |

**Taking the 2009 Cohort scallops out of overwintering in preparation to seed**

**Bay Scallop Market Values**

| 2010 Bay Scallop Market Values | | | | | |
|---|---|---|---|---|---|
| **Stage** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| Larvae | >180µm | 600,000 | $5.50 | $3,300.00 | **$3,300** |
| Seed | 3.1-4.0<br>30.1-35.0 | 169,347<br>30,653 | $16.00<br>$45.00 | $2,709.55<br>$1,379.39 | **$4,089** |
| 2 Year Old Seed (2009 Cohort) | 30.1-35.0 | 276,114 | $45.00 | $12,425.13 | **$12,425** |
| Seeding & Handling | 3.1-35.0 | 476,114 | $2.00 | $952.23 | **$952** |
| **GRAND TOTAL VALUE: $20,766*** | | | | | |

Notes

*Value does not include the scallops that were put into overwintering; overwintered scallops will be valued once they are seeded (ie: 2009 Cohort).

Market Value References

Frank M. Flower Sons Inc., Oyster Bay, NY. 2006 Seed Price List.
Noank Aquaculture Cooperative, Noank, CT and Southold, NY. 2007 Seed Price List.

## Cooperative Research

### Suffolk County Water Quality Grant: 2008-2010

Three Year Bay Scallop Restoration Project

Participants
East Hampton Shellfish Hatchery
East Hampton Trustees
Suffolk County, New York

***Project Description and Timeline***

Hatchery raised scallops (300,000) will be grown through one season and overwintered. In early spring of the following year, the scallops will be compactly dispersed in three low traffic areas, a section in Hands Creek (off Three Mile Harbor), a section in Three Mile Harbor (off Sammy's Beach), and a section in the eastern portion of Napeague Harbor. The plantings will be delineated with buoys in an effort to protect them from disturbance.

Scallop growth and gonad condition (documenting spawning) will be monitored bi-weekly throughout the season (May to October) and scallop survival in the sanctuaries will be monitored on a monthly basis from May to November. Spawning success will be assessed using spat collectors dispersed in surrounding areas and checked for spat on a regular basis from June to November. Spat collectors will be deployed away from seeded areas for purposes of comparison. Scallops will be grown and overwintered in the first and second years of the project and planted and evaluated in the second and third years. If, as a result of the seedings, one of the areas indicates an excellent spawn, and if upon further evaluation, the spawn develops into a significant set, the Trustees might consider a restriction of harvesting for a period of time in that area. It is hoped that the project will provide the conditions necessary for natural population recruitment, resulting in the re-introduction of native scallop populations to surrounding areas.

This project is funded in part by a grant awarded by the Suffolk County Department of Environment and Energy.

East Hampton Shellfish Hatchery's role: contractor

Results of the project are below. Maps of the scallop sanctuaries and spat collection sites can be found in Appendix III (page 35).

The following timeline lists when specific tasks related to the grant were accomplished throughout the year.

# 2010 Three Year Bay Scallop Restoration Project Timeline

## 1st Quarter
1/1/10-3/31/10

| Period Dates | Tasks |
|---|---|
| 1/4-1/10 | |
| 1/11-1/17 | |
| 1/18-1/24 | |
| 1/25-1/31 | |
| 2/1-2/7 | |
| 2/8-2/14 | weekly inspections |
| 2/15-2/21 | of overwinter site |
| 2/22-2/28 | |
| 3/1-3/7 | |
| 3/8-3/14 | |
| 3/15-3/21 | |
| 3/22-3/28 | |

## 2nd Quarter
4/1/10-6/30/10

| Period Dates | Tasks |
|---|---|
| 3/29-4/4 | |
| 4/5-4/11 | |
| 4/6 | Retrieve overwintered scallops, seed Hands Creek |
| 4/7 | Retrieve overwintered scallops, seed Napeague |
| 4/8-4/9 | Retrieve overwintered scallops, seed Sammy's |
| 4/12-4/18 | |
| 4/19-4/25 | |
| 4/15 | Gonad Assessment (#1) |
| 4/26-5/2 | |
| 5/3-5/9 | |
| 5/3-5/5 | Survival Survey (#1) |
| 5/7 | Gonad Assessment (#2) |
| 5/10-5/16 | |
| 5/17-5/23 | |
| 5/18 | Gonad Assessment (#3) |
| 5/24-5/30 | |
| 5/28 | Spawn Cohort 1 |
| 5/31-6/6 | |
| 6/1 | Survival Survey (#2) |
| 6/2 | Spawn Cohort 2 |
| 6/3 | Spawn Cohort 3 |
| | Gonad Assessment (#4) |
| 6/7-6/13 | Deploy Spat 1 |
| 6/14-6/20 | |
| 6/15 | Gonad Assessment (#5) |
| 6/16 | Begin move to downwelling |
| 6/17 | Spawn Cohort 4 |
| 6/21-6/27 | |
| 6/24 | Begin move to upwelling |
| 6/28-7/4 | Deploy Spat 2 |
| 6/28 | Survival Survey (#3) |
| | Goand Assessment (#6) |
| 6/29 | Spawn Cohort 5 |
| 7/1 | Spawn Cohort 6 |

## 3rd Quarter
7/1/10-9/30/10

| Period Dates | Tasks |
|---|---|
| 7/5-7/11 | |
| 7/12-7/18 | |
| 7/12 | Gonad Assessment (#7) |
| 7/14 | Complete move to downwelling |
| 7/19-7/25 | |
| 7/19-7/20 | Collect 1/Deploy Spat 3 |
| 7/23 | Begin move to field: scallops to 9 boxes |
| | Complete move to upwelling |
| 7/26-8/1 | |
| 7/27 | Survival Survey (#4) |
| | Gonad Assessment (#8) |
| 8/2-8/8 | |
| 8/3 | Complete move to field: scallops to 19 boxes |
| 8/9-8/15 | |
| 8/9-8/10 | Collect 2/Deploy Spat 4 |
| 8/11 | Scallops to 15 boxes |
| | Gonad Assessment (#9) |
| 8/16-8/22 | |
| 8/19-8/20 | Scallops to 35 boxes |
| 8/23-8/29 | |
| 8/26 | Collect 3/Deploy Spat 5 |
| 8/27 | Transfer to 121 pearl nets |
| | Survival Survey (#5) |
| | Gonad Assessment (#10) |
| 8/30-9/5 | Transfer to 111 pearl nets |
| 9/6-9/12 | |
| 9/10 | Gonad Assessment (#11) |
| 9/13-9/19 | Transfer to 348 pearl nets |
| 9/18 | Survival Survey (#6) |
| 9/20-9/26 | |
| 9/20 | Transfer to 27 pearl nets |
| | Gonad Assessment (#12) |
| 9/21 | Collect 4/Deploy Spat 6 |
| 9/27-10/3 | |

## 4th Quarter
10/1/10-12/31/10

| Period Dates | Tasks |
|---|---|
| 10/4-10/10 | Transfer to 240 blocks |
| 10/6 | Gonad Assessment (#13) |
| 10/11-10/17 | |
| 10/12-10/13 | Collect Spat 5 |
| 10/18-10/24 | |
| 10/22 | Survival Survey (#7) |
| | Gonad Assessment (#14) |
| 10/25-10/31 | |
| 10/25-10/26 | Transfer blocks to overwinter |
| 10/28 | Collect Spat 6 |
| 11/1-11/7 | |
| 11/8-11/14 | |
| 11/15-11/21 | |
| 11/22-11/28 | |
| 11/22 | Scallop bug dive |
| 11/29-12/5 | |
| 12/6-12/12 | |
| 12/10 | Three Mile Harbor eelgrass dive |
| 12/13-12/19 | |
| 12/13 | Napeague Harbor eelgrass dive |
| 12/20-12/26 | |
| 12/27-1/2 | |

***Gonad Assessment***

The gonad index graphs illustrate the relationship between gonad development and water temperature. As the water temperature rose in the spring the gonad index also rose and peaked at the end of May/beginning of June, indicating a spawning event (Figures 1-3). This is further illustrated in the histogram depicting gonad index and spat collection (Figure 6). Figure 6 shows a peak in gonad index in the beginning of June followed by a significant spat collection during the end of July and beginning of August. There were slight rises in the gonad index in the late summer and fall as the scallops continued to prepare to spawn, though less vigorously, throughout the season.

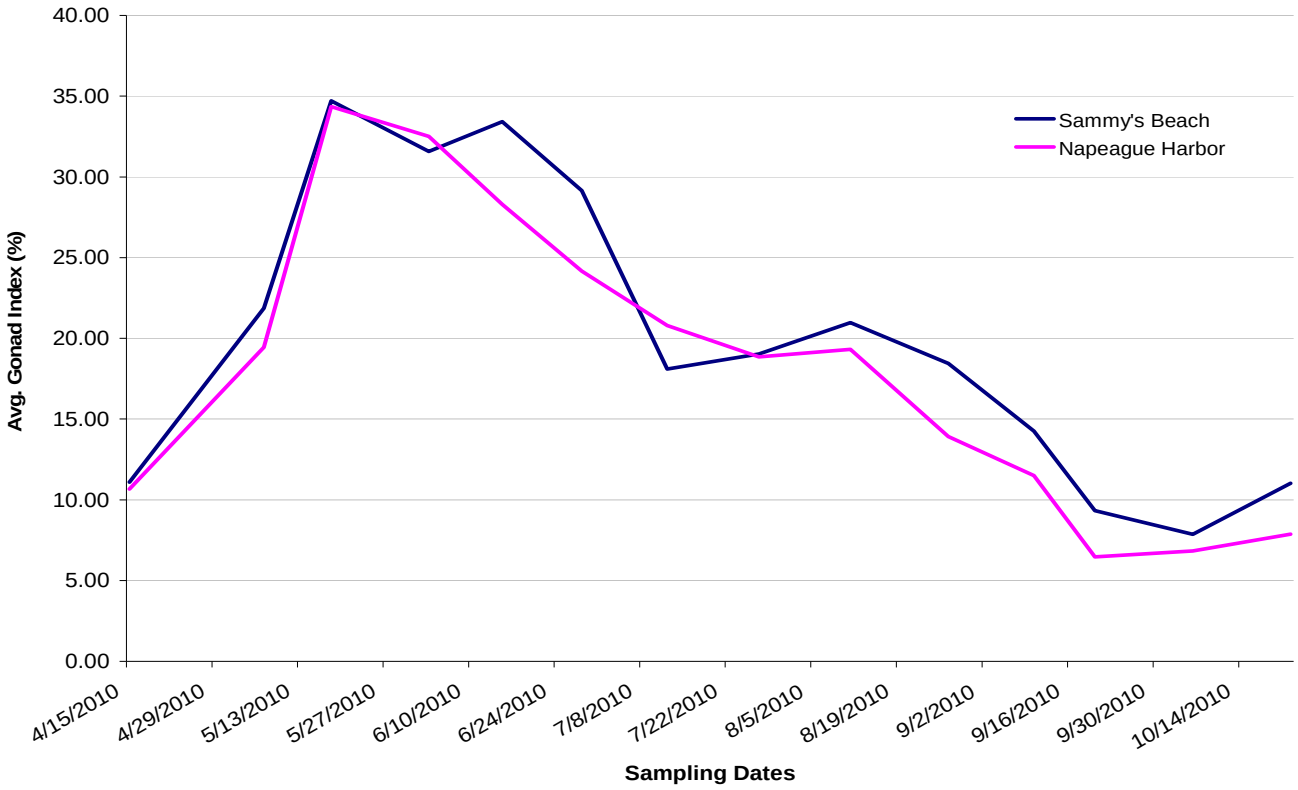



**Figure 1:** 2010 average gonad to body weight ratios (gonad index) for scallop sanctuaries

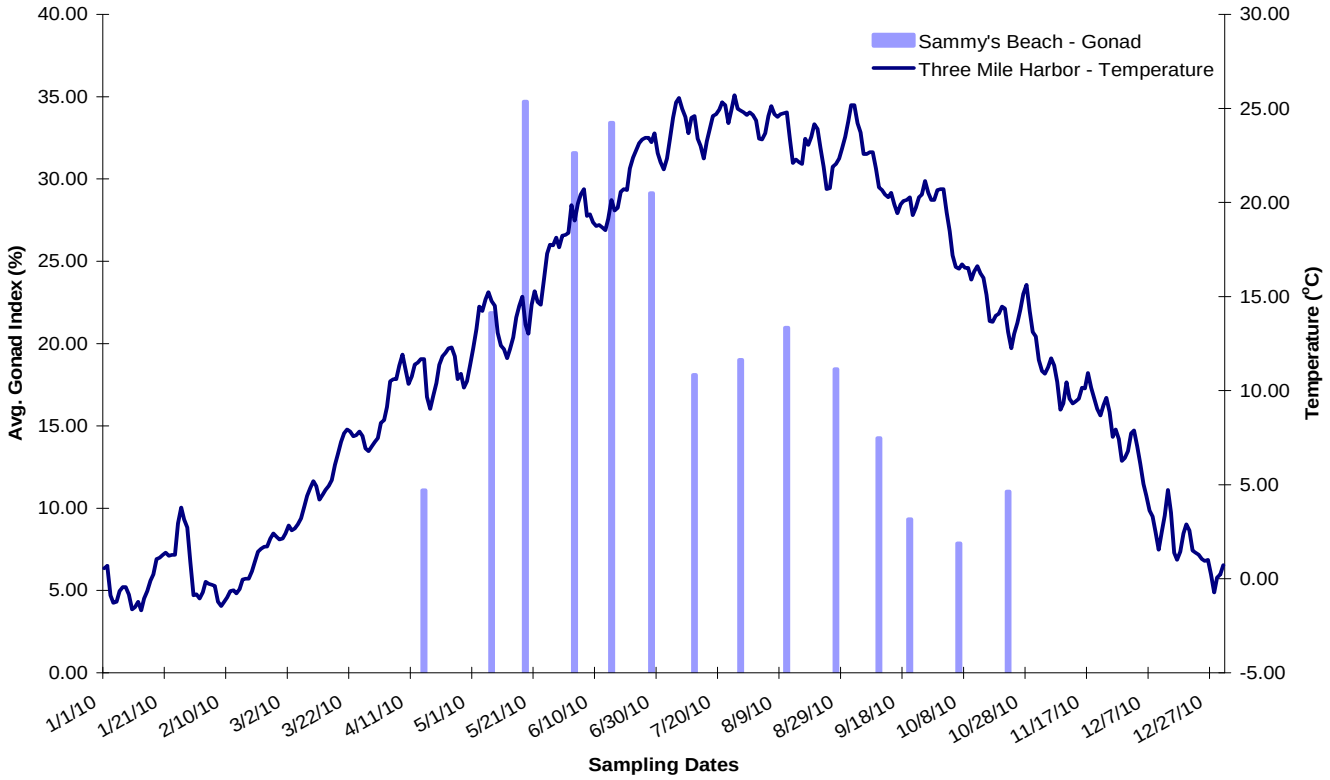



**Figure 2:** 2010 gonad index at Sammy's Beach scallop sanctuary vs. average daily temperatures for Three Mile Harbor

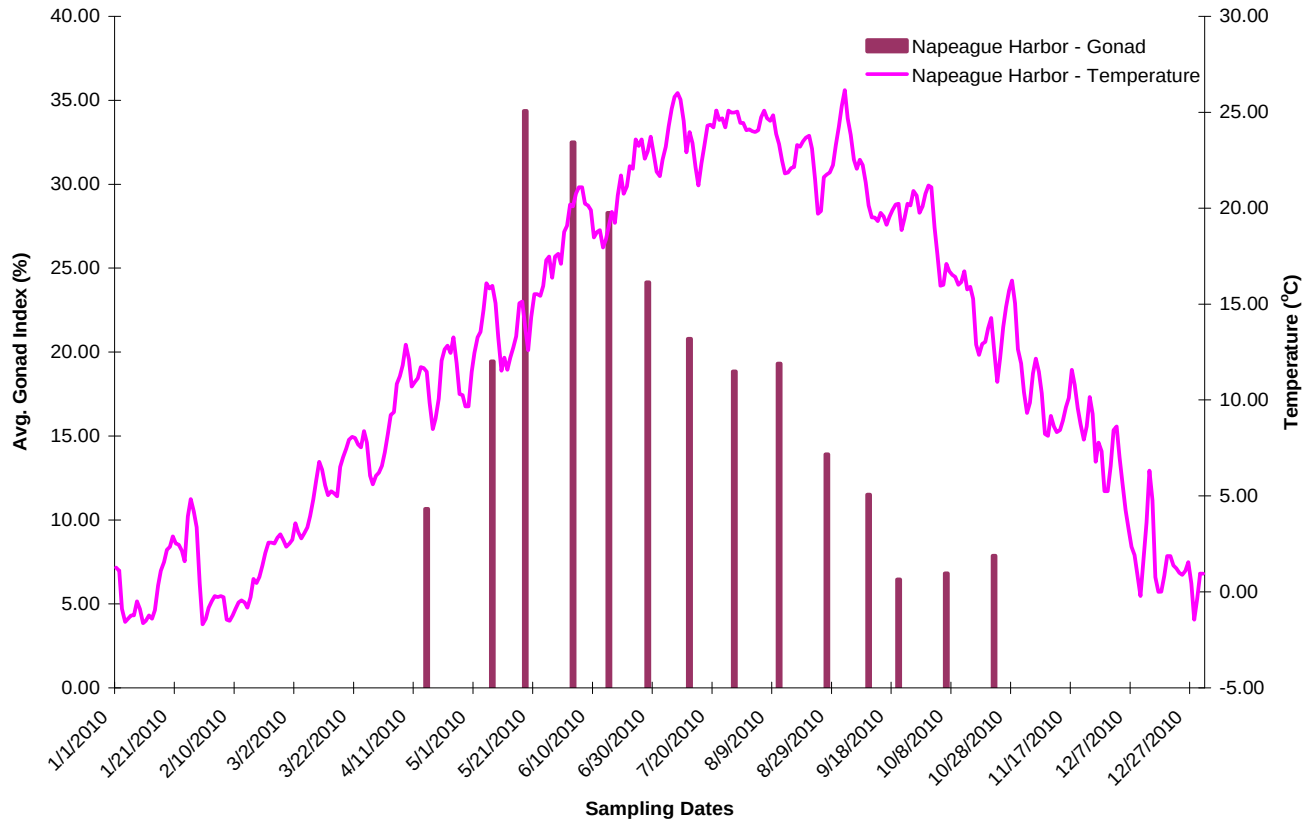



**Figure 3:** 2010 gonad index vs. average daily temperatures for the Napeague Harbor scallop sanctuary

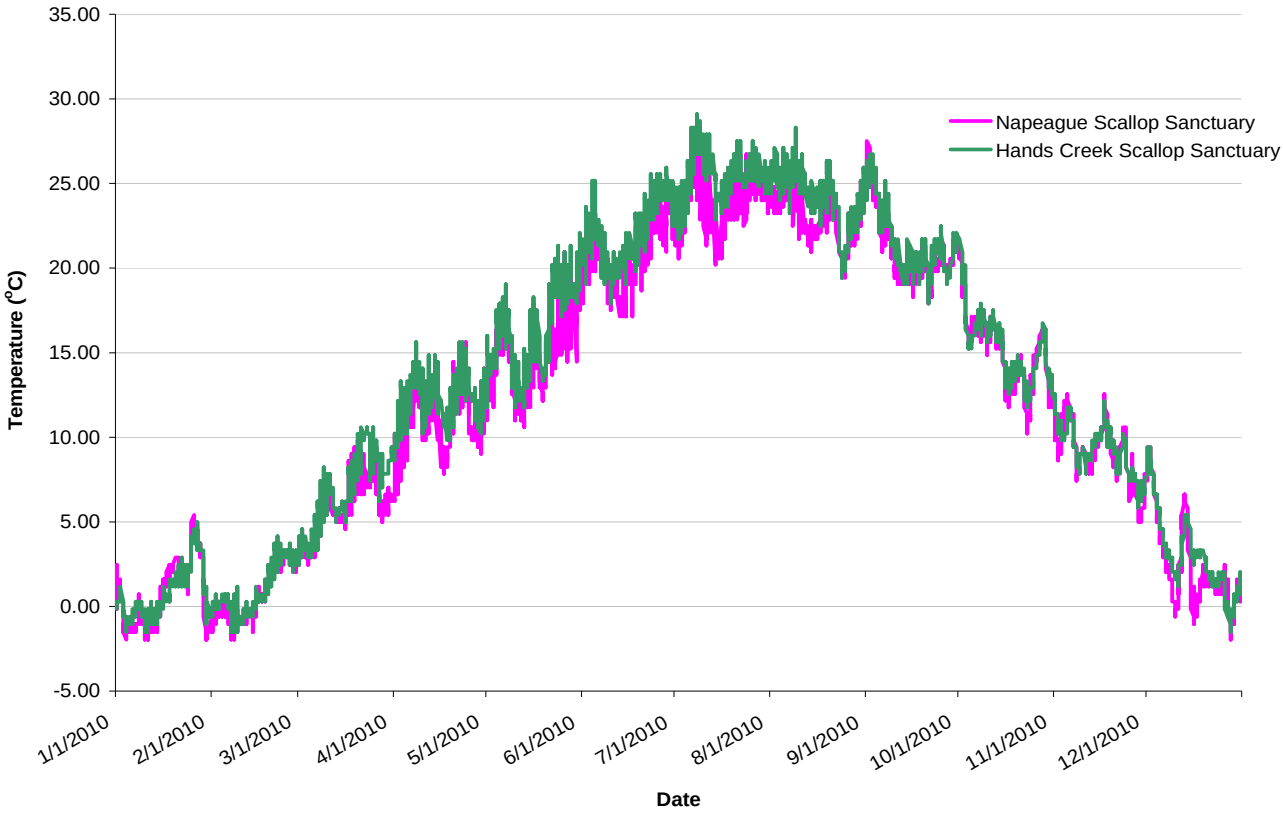



**Figure 4:** 2010 average daily temperatures at the Napeague Harbor and Hands Creek scallop sanctuaries

Temperature data from the Sammy's Beach scallop sanctuary in Three Mile Harbor are not shown because the temperature logger for that location was missing at the time of collection, temperatures from the dock at Gann Road at Three Mile Harbor were used instead. The average water temperatures at the Hands Creek scallop sanctuary were warmer than at the Napeague sanctuary. These temperature differences could help explain the exhibited variations found in scallop survival and eelgrass coverage as both may be affected by high water temperatures (refer to sections below).

### *Spat Collection*

Spat collection numbers peaked at Three Mile Harbor during the first round of spat collection, while Napeague Harbor peaked at the second round, although this is not corroborated with gonad index data which indicated a concurrent peak at both sanctuaries (Figure 5). The delay in peak spat collection at Napeague Harbor may be explained by the cooler water temperatures there as compared to Three Mile Harbor (Appendix II, page 33). Although slight, the decreased temperatures in Napeague Harbor may have been enough to reduce growth rates in Napeague Harbor, therefore delaying setting, thus peak spat collection.

When the spat collection data are overlaid with the gonad index (Figure 6), one can easily see the dynamics of scallop spawning; the gonad index peaks in early June followed by a peak in spat numbers in late July/early August, and a second, smaller peak in the gonad index in late August yields a corresponding increase in spat in mid-October.

Please refer to Appendix III (page 35) for the 2010 Scallop Spat Collection Site Maps.

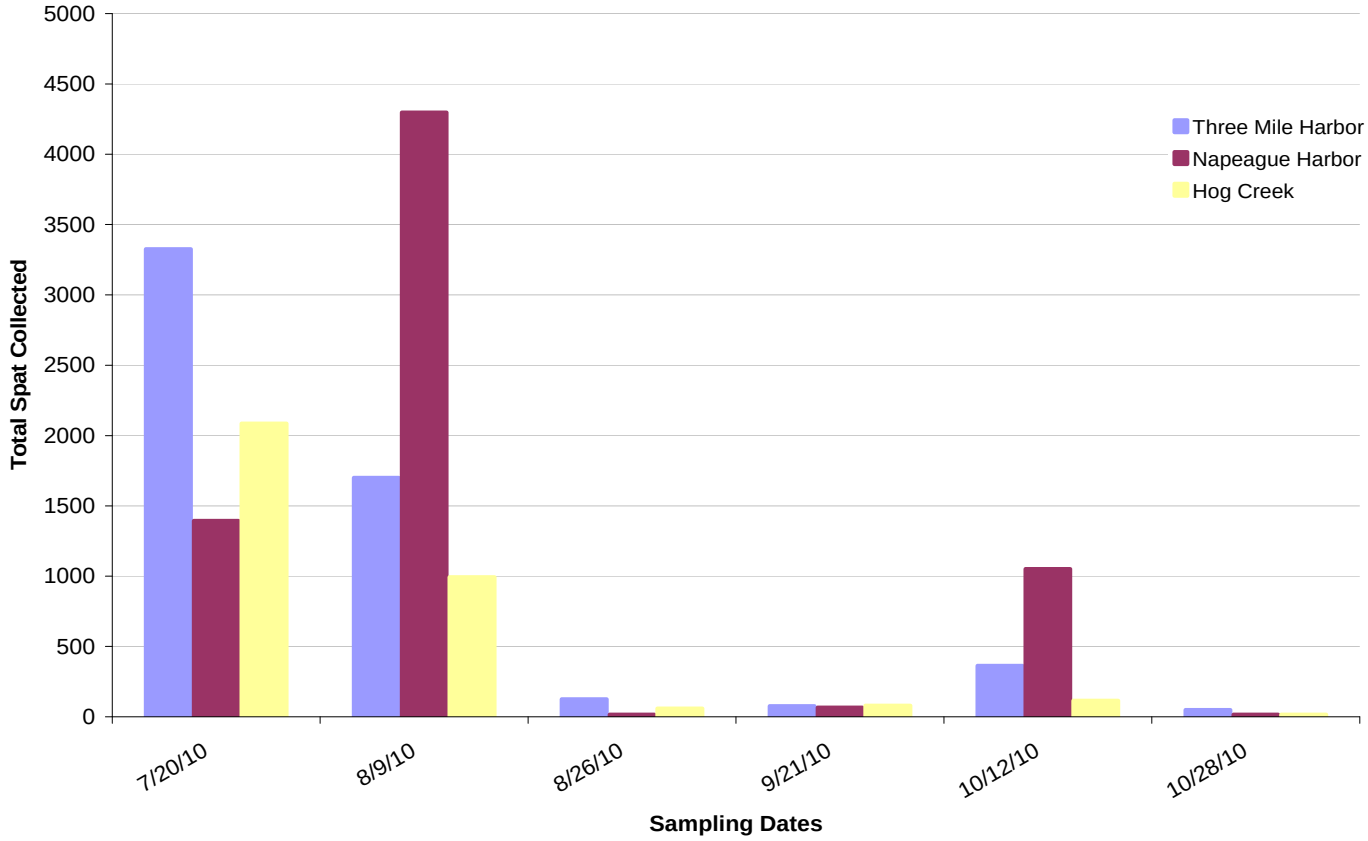



**Figure 5:** 2010 scallop spat collection for all sites

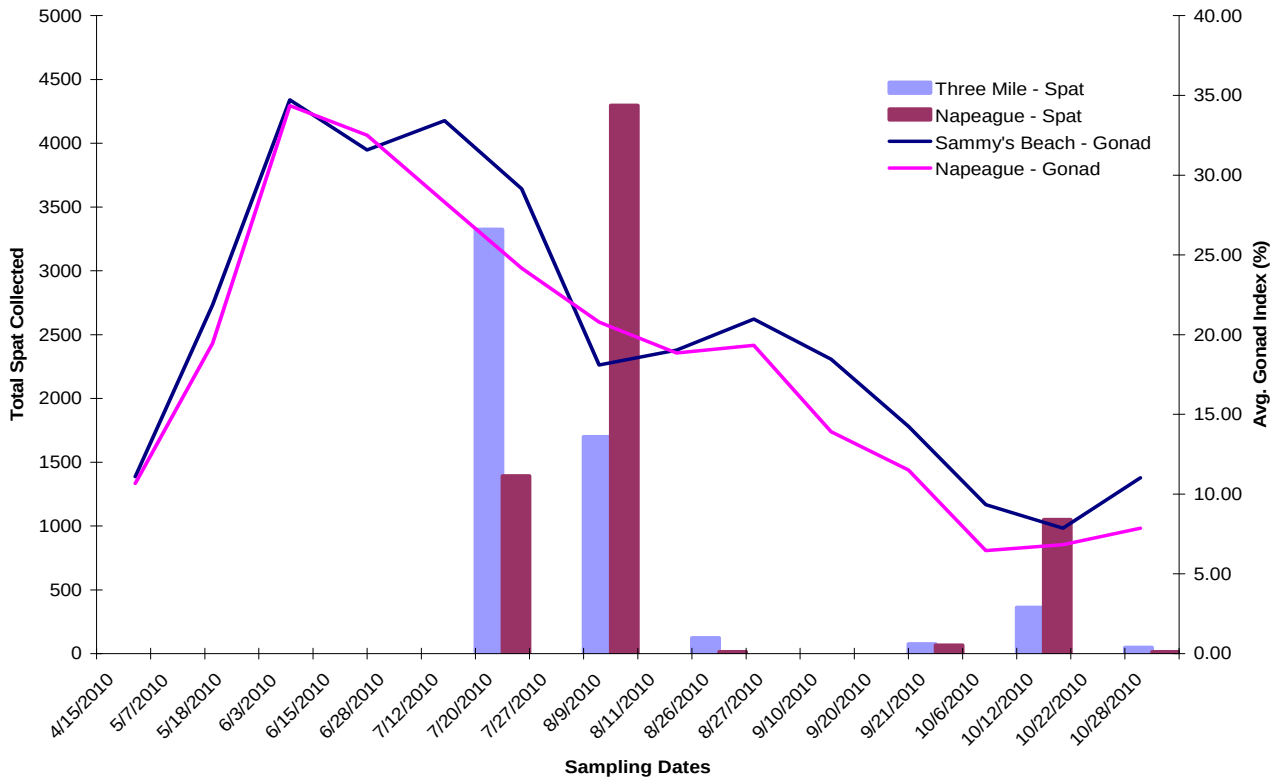



**Figure 6:** 2010 gonad index vs. spat collection for Three Mile and Napeague Harbors

Figures 7-9 illustrate spat collection data at each collection station and sample date for 2010.

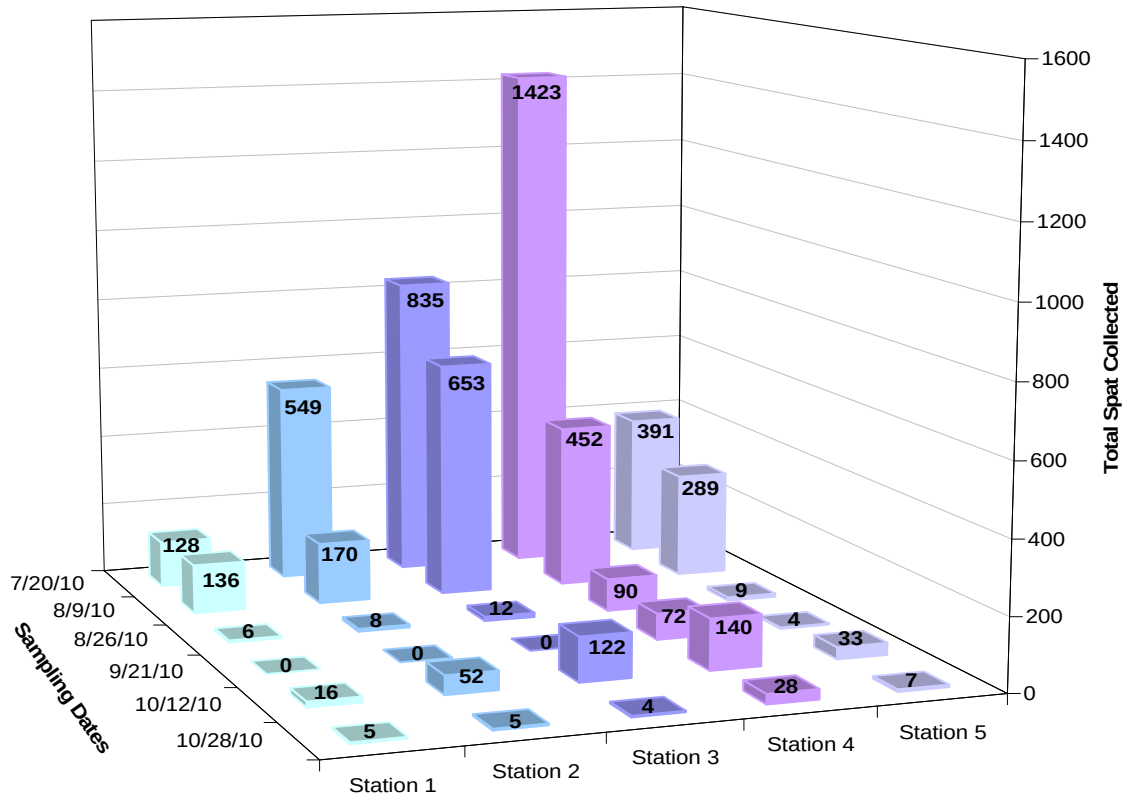



**Figure 7:** 2010 Three Mile Harbor scallop spat collection by station and sampling date

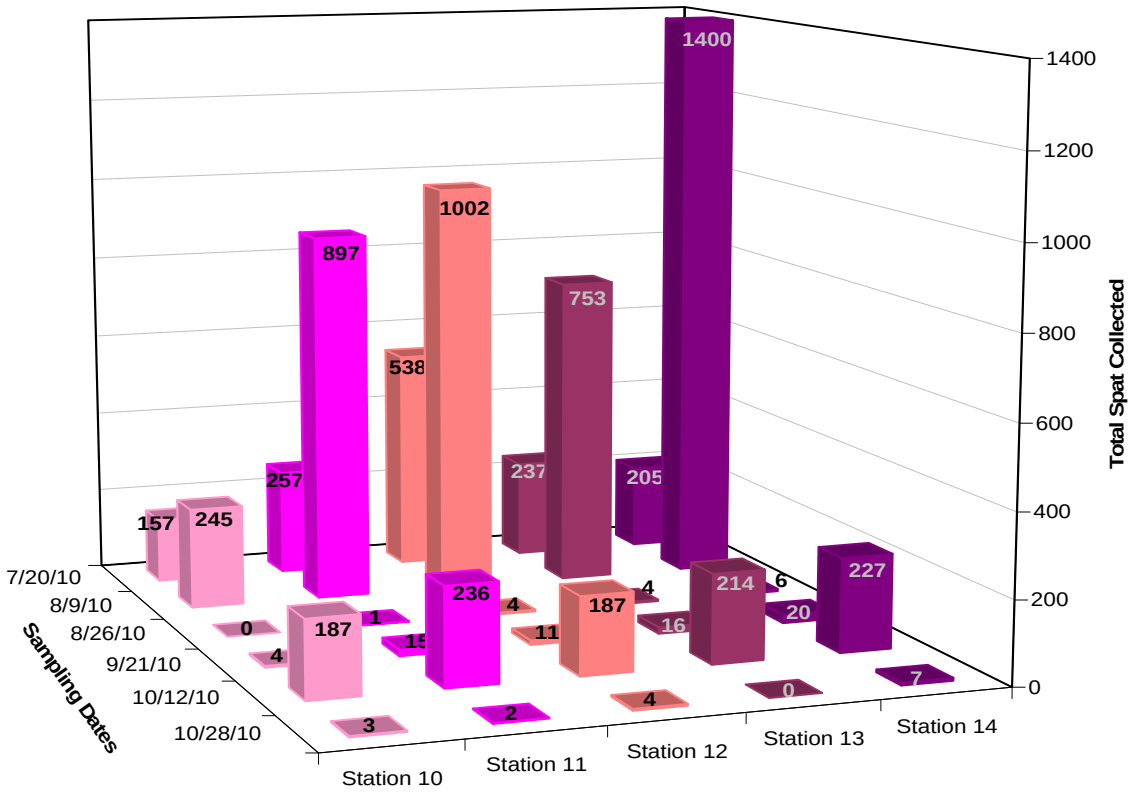



**Figure 8:** 2010 Napeague Harbor scallop spat collection by station and sampling date

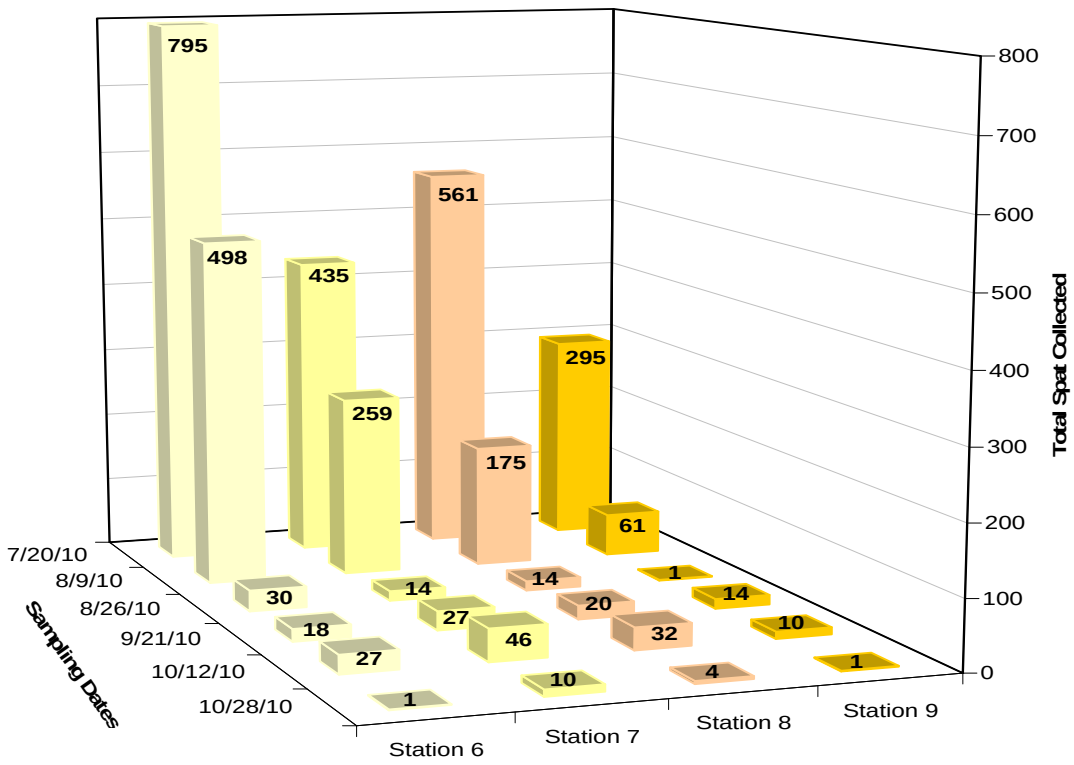



**Figure 9:** 2010 Hog Creek scallop spat collection by station and sampling date

## *Scallop Sanctuary Survival Surveys*

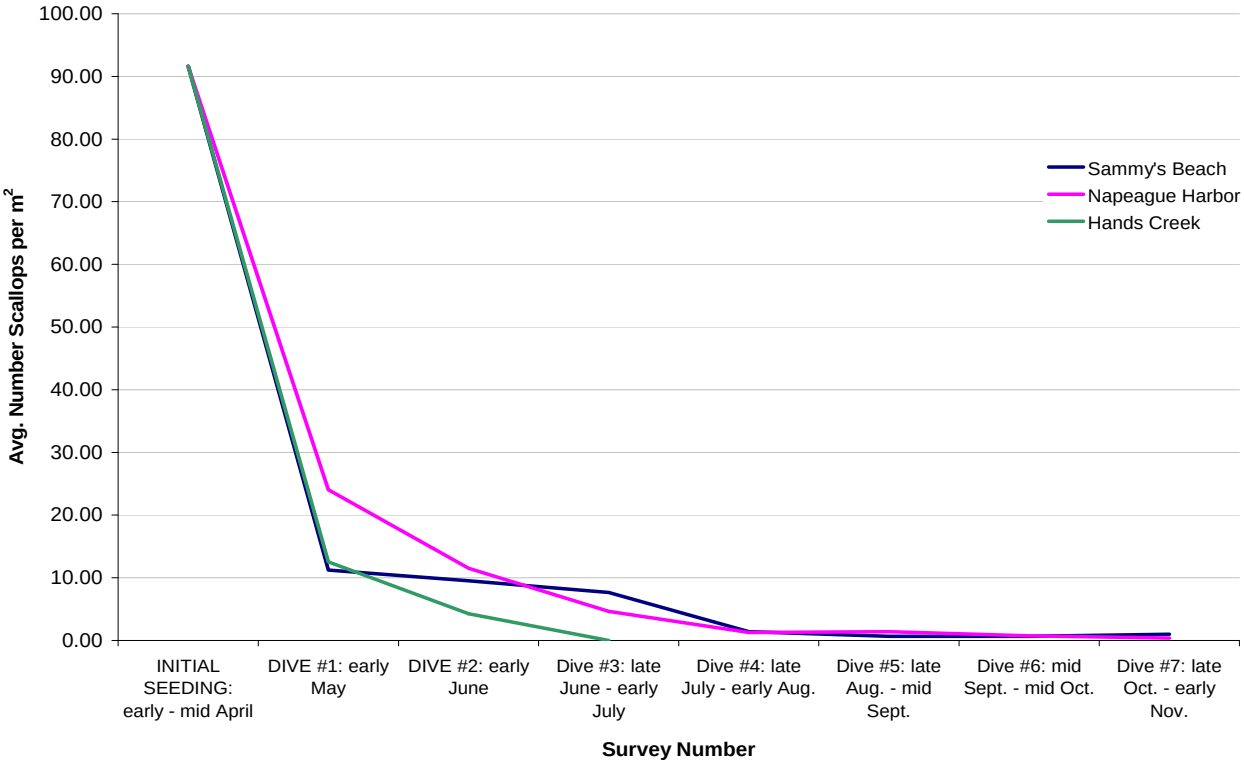



**Figure 10:** 2010 scallop sanctuary survival surveys

It should be noted that the initial decline in survival can be explained by the fact that some scallops were inadvertently seeded just outside the sanctuary borders and some scallops move out of the sanctuary on their own. This is evident at all sanctuary sites where scallops were observed outside the boundary of the sanctuaries. Hands Creek survival plummeted to 0% by the third dive on June 28th. Sammy's and Napeague had a more gradual decline in survival, with Sammy's (at 1% survival) doing slightly better than Napeague (at just under 0.5% survival) by the final dive on October 22nd.

### *Scallop Bug Dives*

Scallop bug dives were conducted at spat collection stations by the Long Island University dive team, led by Steve Tettlebach. The following are the results from Napeague Harbor.

| **2010 LIU Scallop Bug Dives** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Station** | **Transect** | **Adult Scallops** | | | **Bug Scallops** | | | **Sizes (mm)** | **Bottom Type** | **Predators** |
| | | Live | Dead | Skunks | Live | Dead | Skunks | | | |
| 10 | W | 2 | 0 | 0 | 0 | 0 | 0 | N/A | Mud/Sand - dense Ampelisca mats, sparse to moderate eelgrass, 0-5% SAV | 2 *P. pollicaris* |
| | N | 2 | 0 | 0 | 0 | 0 | 0 | | | |
| | S | 1 | 0 | 0 | 0 | 0 | 0 | | | |
| | | **Total/m$^2$: 0.10** | | | **Total/m$^2$: 0** | | | | | |
| 11 | NE | 6 | 0 | 0 | 0 | 0 | 0 | Range: 52 Average: 52 | Sand - some Ampelisca, <5% SAV | 2 *D. sayi*; 1 *Libinia* |
| | W | 3 | 0 | 0 | 0 | 0 | 0 | | | |
| | SW | 6 | 0 | 0 | 1 | 0 | 0 | | | |
| | | **Total/m$^2$: 0.30** | | | **Total/m$^2$: 0.02** | | | | | |
| 12 | N | 1 | 0 | 0 | 0 | 0 | 0 | N/A | Sand - 50% SAV (primarily Codium) | 1 *P. pollicaris* |
| | SW | 1 | 0 | 0 | 0 | 0 | 0 | | | |
| | E | 2 | 0 | 0 | 0 | 0 | 0 | | | |
| | | **Total/m$^2$: 0.08** | | | **Total/m$^2$: 0** | | | | | |
| 13 | E | 0 | 0 | 0 | 0 | 0 | 0 | N/A | Sand/Mud - some Crepidula, dense Ampelisca, 5-10% SAV (primarily Enteromorpha) | 3 *Libinia*; 2 *P. pollicaris* |
| | SW | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | N | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | | **Total/m$^2$: 0** | | | **Total/m$^2$: 0** | | | | | |
| 14 | W | 0 | 0 | 0 | 2 | 0 | 0 | Range: 44-52 Average 46 | Sand - shell, <5% SAV | 1 *Libinia*; 2 *P. pollicaris* |
| | E | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | S | 0 | 0 | 0 | 4 | 0 | 0 | | | |
| | | **Total/m$^2$: 0** | | | **Total/m$^2$: 0.12** | | | | | |

***Eelgrass Surveys***

**A healthy scallop in the Napeague Harbor eelgrass meadow;**
**Photo courtesy of Cornell Cooperative Extension**

Please see the 2011 Eelgrass Survey section (page 68) for graphs of the cumulative 2008-2011 survey data.

## Effects of carbon dioxide and a harmful alga (*Aureococcus anophagefferens*) on the growth and survival of larval oysters (*Crassostrea virginica*) and scallops (*Argopecten irradians*)

Participants
Stephanie C. Talmage
Christopher J. Gobler

Project abstract is not available at this time due to its pending publication in Marine Ecology Progress Series

East Hampton Shellfish Hatchery's role: provided oyster larvae

## Novel methodologies to overwinter cultured hard clams in the Northeast U.S.: 2010-2012

The first year of a 2-year study

Participants

John Kraeuter, Haskin Shellfish Research Lab., Rutgers University
V. Monica Bricelj, Institute of Marine and Coastal Sciences, Rutgers University
Gef Flimlin, Cooperative Extension of Ocean County
Dr. Chester Zarnoch, Baruch College of CCNY
David Bushek, Haskin Shellfish Research Lab., Rutgers University
Brian Beal, Universtiy of Maine at Machias
George Mathis, Mathis Clam Farm
Joseph Porada, Egypt Bay Aquafarms
East Hampton Shellfish Hatchery

### *Project Objectives*

1. To determine whether techniques used to hold hard clam seed successfully over the winter in Maine can be applied to other locations in the Northeast region;
2. To examine survival of overwintered hard clam seed planted on farms at various locations in the Northeast region;
3. To examine temporal variation in overwinter success;
4. To assess the potential of cold shock in the mitigation of overwintering mortalities by enhancing thermotolerance.

### *Project Description*

This project will examine experimentally new overwintering technologies for cultured hard clam juveniles in ME, NY, and NJ. The new methodology is based on 12 years of successful overwintering of cultured juveniles of *Mya arenaria* in Maine. An initial overwintering trial with hard clam seed during the winter of 2006-2007 at the Downeast Institute (DEI), Beals, Maine resulted in >99% survival over 177-days. Subsequent monitoring of seed in protected field plots in eastern Maine indicated >80% survival for four months. Similar results have been found during winters of 2007-2008 and 2008-2009, thereby substantiating these preliminary results and warranting large-regional tests of this methodology. We propose two experimental field trials from Nov. 2009 to April 2010, and Nov 2010 to April 2011 in the three states to examine spatial and temporal variation in the new overwintering technique. Commercial quantities of local hard clam seed will be overwintered in each state, and overwintering seed in the other states. In each state, we will compare survival of overwintered seed using the new technique to survival of seed overwintered in protected field plots, as is the current, standard practice. In addition, we will follow the fate of local seed that survive the new overwintering methods in protected field plots in each state for six months. Biochemical assays will be conducted on clams from all size classes and origins at each field site overwintered using the new methodology to measure energy use through the overwintering period and to determine if the ME genetic stock is better adapted to temperature stress by using less energy stores. Simultaneously measuring biochemical composition and environmental parameters should also provide an understanding of how the various clam strains respond physiologically to the local conditions and culture methods.

East Hampton Shellfish Hatchery's role: industry participant, provider of New York seed

## Public Outreach

2010 community involvement and education

- *Blue Ocean Institute* Boat Tour: Barley participated in the Blue Ocean Institute boat tour where he spoke to college students about the hatchery and the biology of shellfish of the region.
- Participation in the *Peconic Estuary Program Natural Resources Subcommittee* by John Aldred
- Field and nursery tours for *Cornell's Aquavet Program*.
- Work shadowing day with *Springs School Students*
- *5th Annual Shellfish Culture Workshop Series*, by Barley Dunne, at the Montauk, Three Mile Harbor, and Napeague Harbor hatchery sites
- *South Fork Natural History Museum* tour of the field site led by Frank Quevedo
- Barley participated at the *Trustees' Largest Clam Contest* where he displayed shellfish, discussed and answered questions about hatchery operations and conducted a clam count guessing game for which the Trustees provided a prize
- Nicole Ficeto developed a new *Town website for the Aquaculture Department* with photos and links to media and educational resources (www.town.east-hampton.ny.us/HtmlPages/Aquaculture/Aquaculture.htm)

## Infrastructure Management

General

- Performed annual maintenance on all small engines
- Performed annual maintenance on all saltwater pumps
- Installed plywood flatbed on the Ford F150 in order to cover rusted metal bed

Boats

- Performed annual maintenance on all outboard motors
- Sharpie
    - Applied new bottom paint
    - Repainted gunwale
    - Refurbished port side number plate
- 24’ Carolina Skiff
    - Installed waterline rub rail on starboard side
    - Repainted mahogany bench
    - Replaced broken tachometer
    - Modified stern rub rails so they don’t catch on growout rafts
    - Filled gouges in hull

Field Growout Related

- Constructed 46 new growout block tops
- Split wide rafts to use as breakwater rafts
- Coated all growout rafts with 50/50 formula linseed oil/turpentine in order to prevent borer damage

Montauk facility

- Installed new boiler
- Repainted beam above mass culture tanks
- Extended autofeed overflow to drain
- Recoated hatchery conical tables with coal tar epoxy
- Removed pond liner
- Removed old tidal upweller from site
- Applied Epoxy to two oyster setting trays
- Painted and replaced shingles on pump shacks
- Trimmed and painted outback wall

## **Appendix I: 2010 Harbor Seeding Maps – All Species**

Map 1: Three Mile Harbor
Map 2: Hog Creek
Map 3: Accabonac Harbor
Map 4: Napeague Harbor
Map 5: Lake Montauk
Map 6: All Harbors

CARTOGRAPHY - RONN PIRRELLI - 01/12

# THREE MILE HARBOR / 2010 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

- CLAMS: 1 y.o.'s 758,121 (Avg. 14.4 mm) / 2 y.o.'s 107,650 (Avg. 18.6 mm)
- OYSTERS: 1 y.o.'s 1,975,224 (Avg. 28.2 mm) / 2 y.o.'s 114,40 8 (Avg. 33.3 mm)
- SCALLOPS: 500,000 (Avg. < 0.5 mm) / 1,316 (2 y.o.'s)
- SCALLOPS SPAWNER SANCTUARIES: 183,199 (2 y.o.'s)

*C:\rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_10\Three Mile Harbor\Three_Mile_Harbor_Seeding_2010*

CARTOGRAPHY - RONN PIRRELLI - 01/12

# HOG CREEK / 2010 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

CLAMS: 75,840 (Avg. 13.3 mm)

OYSTERS: 70,848 (Avg. 31.4 mm)

*C:\rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_10\Hog Creek\Hog_Creek_Seeding_2010*

CARTOGRAPHY - RONN PIRRELLI - 01/12

# ACCABONAC HARBOR / 2010 SEEDING


N

NOT TO SCALE

EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

CLAMS: 1 y.o.'s 399,840 (Avg. 15.4 mm) / 2 y.o.'s 132,043 (Avg. 17.8 mm)

OYSTERS: 1,055,933 (Avg. 31.7 mm)

C:\rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_10\Accabonac Harbor\Accabonac_Harbor_Seeding_2010

CARTOGRAPHY - RONN PIRRELLI - 01/12

# NAPEAGUE HARBOR / 2010 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

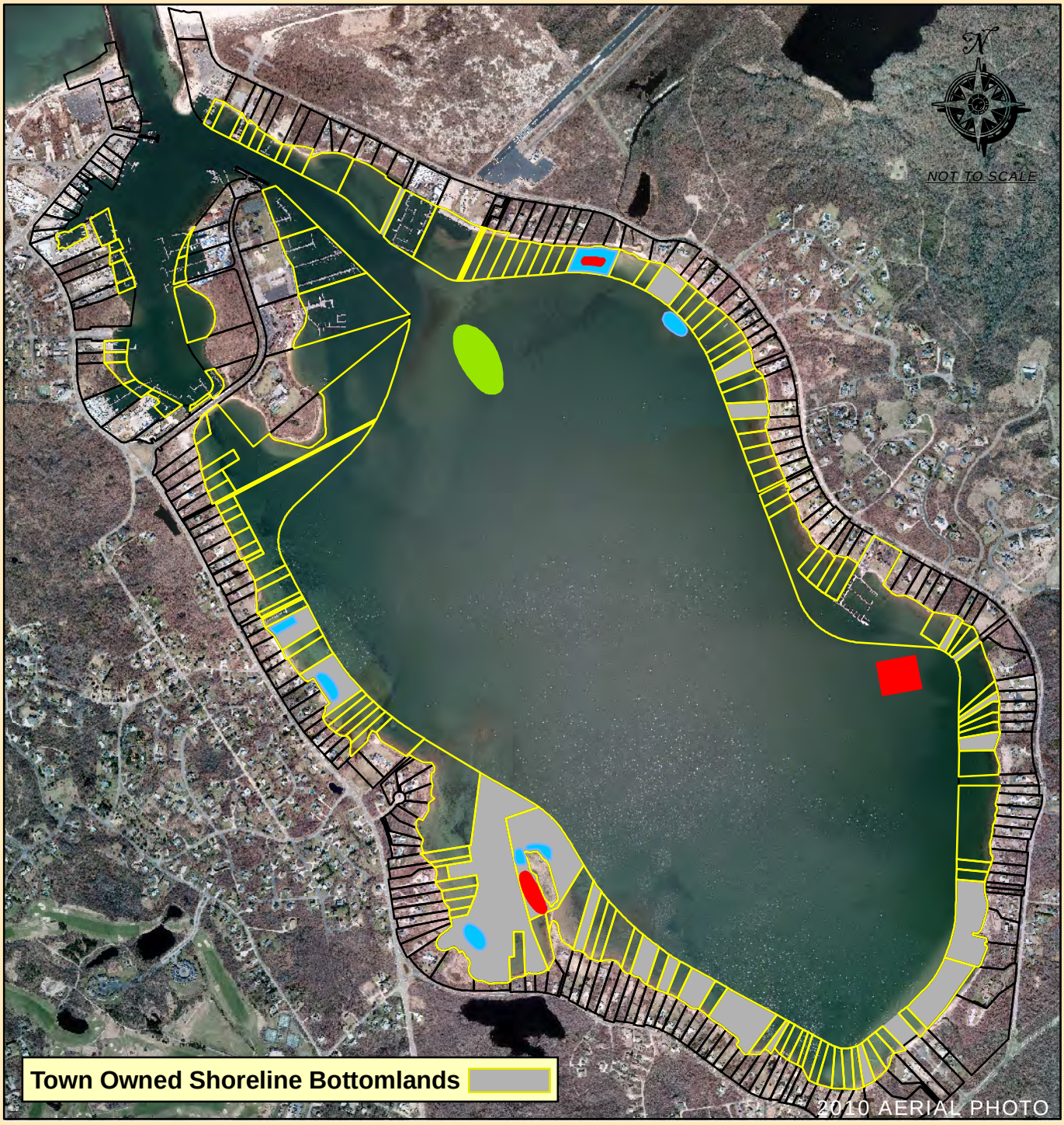
***KEY:***

- CLAMS: 1 y.o.'s 809,632 (Avg. 13.8 mm) / 2 y.o.'s 98,253 (Avg. 18.5 mm)
- OYSTERS: 1 y.o.'s 1,363,274 (Avg. 26.1 mm) / 2 y.o.'s 84,640 (Avg. 36.0 mm)
- SCALLOPS SPAWNER SANCTUARY: 91,599
- SCALLOPS: 336,000 / OYSTERS: 25,830 OVERWINTERED

*C:\rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_10\Napeague Harbor\Napeague_Harbor_Seeding_2010*

CARTOGRAPHY - RONN PIRRELLI - 01/12

# LAKE MONTAUK / 2010 SEEDING




EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

- CLAMS: 1 y.o.'s 1,826,526 (Avg. 12.8 mm) / 2 y.o.'s 62,540 (Avg. 18.2 mm)
- OYSTERS: 1 y.o.'s 1,360,236 (Avg. 30.6 mm) / 2 y.o.'s 24,750 (Avg. 34.0 mm)
- SCALLOPS: 30,653 (Avg. 31.2 mm)

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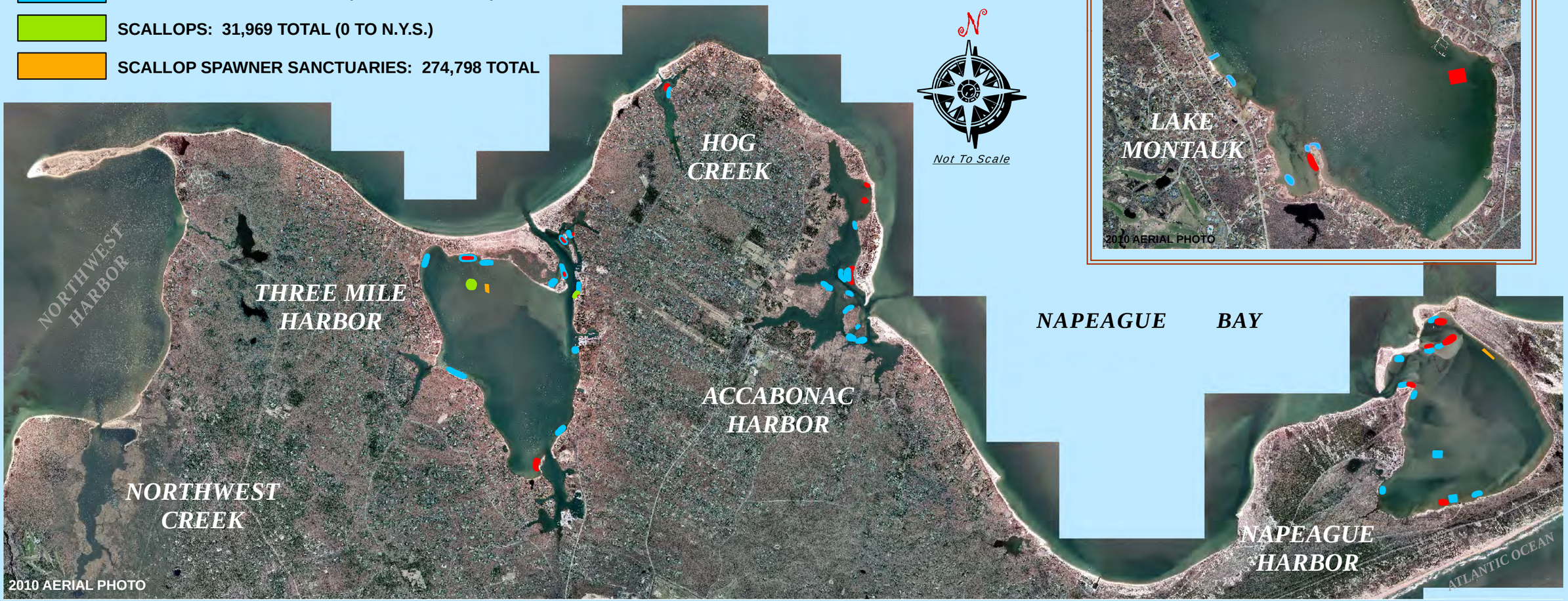
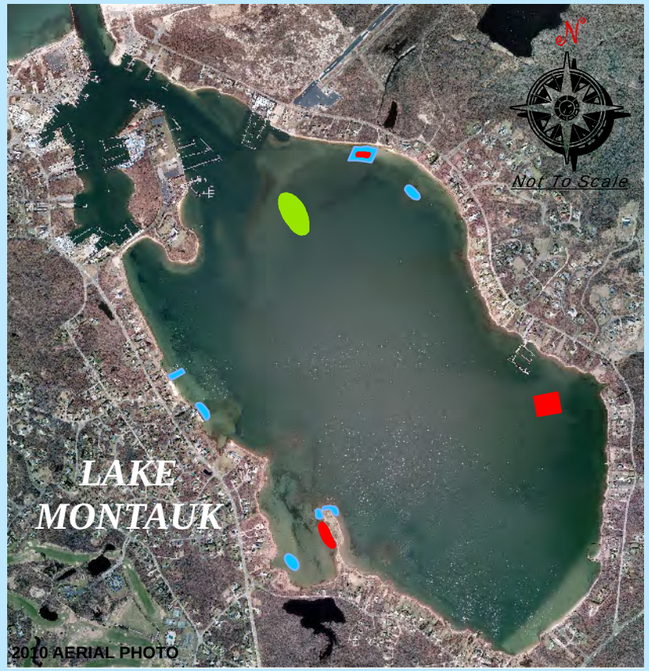
CARTOGRAPHY - RONN PIRRELLI - 01/12

# 2010 SEED PLACEMENT

***LEGEND***

- CLAMS: 6,140,368 TOTAL (577,543 TO N.Y.S.)
- OYSTERS: 6,320,757 TOTAL (245,612 TO N.Y.S.)
- SCALLOPS: 31,969 TOTAL (0 TO N.Y.S.)
- SCALLOP SPAWNER SANCTUARIES: 274,798 TOTAL




Prepared By
THE TOWN OF EAST HAMPTON
Suffolk County, New York

## TOWN OF EAST HAMPTON
**Suffolk County, New York**

# SHELLFISH HATCHERY

Date Prepared: January 2012

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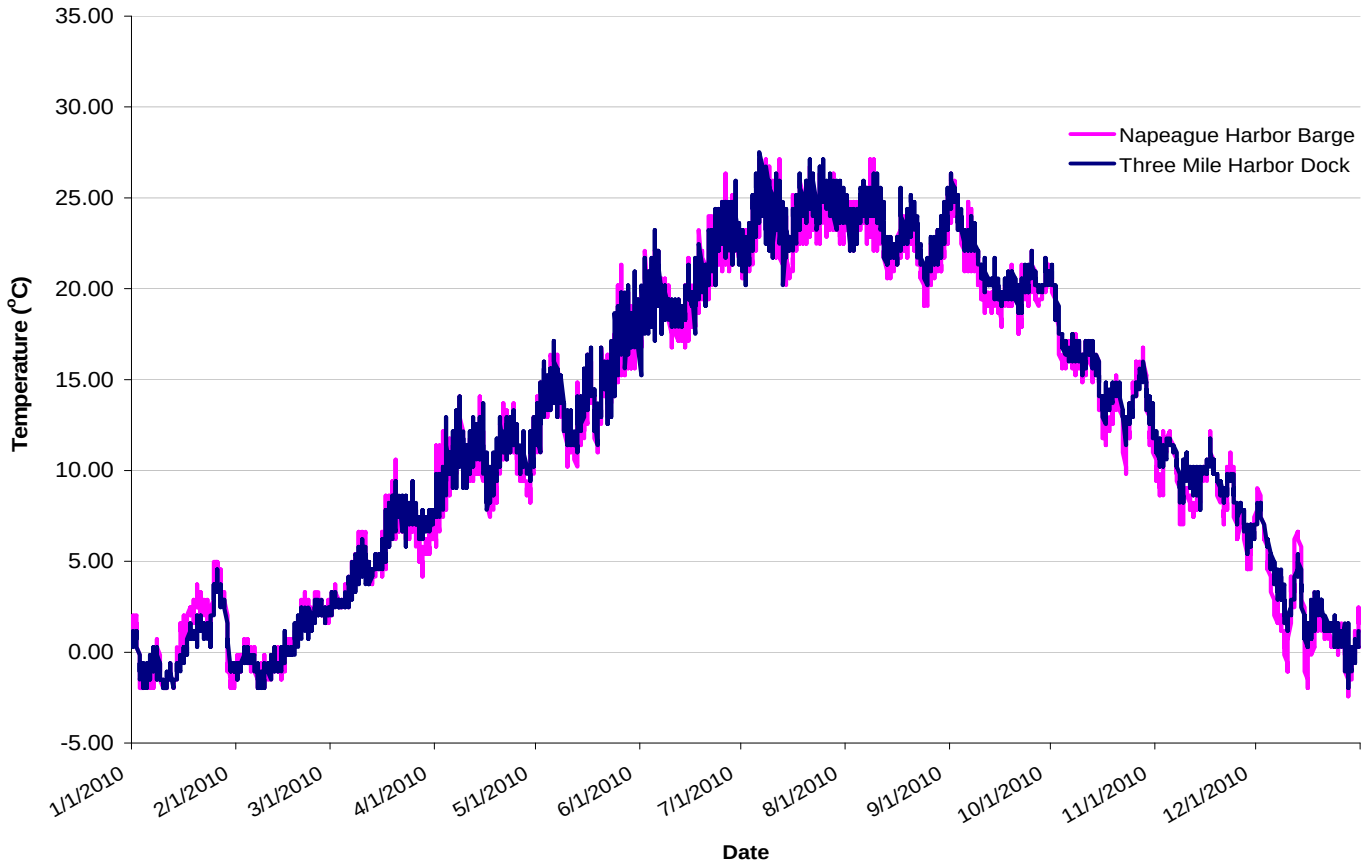
## **Appendix II: 2010 Average Daily Water Temperatures**

Figure 1: Nursery and Field growing sites




2010 average daily temperatures at the nursery and field growing sites

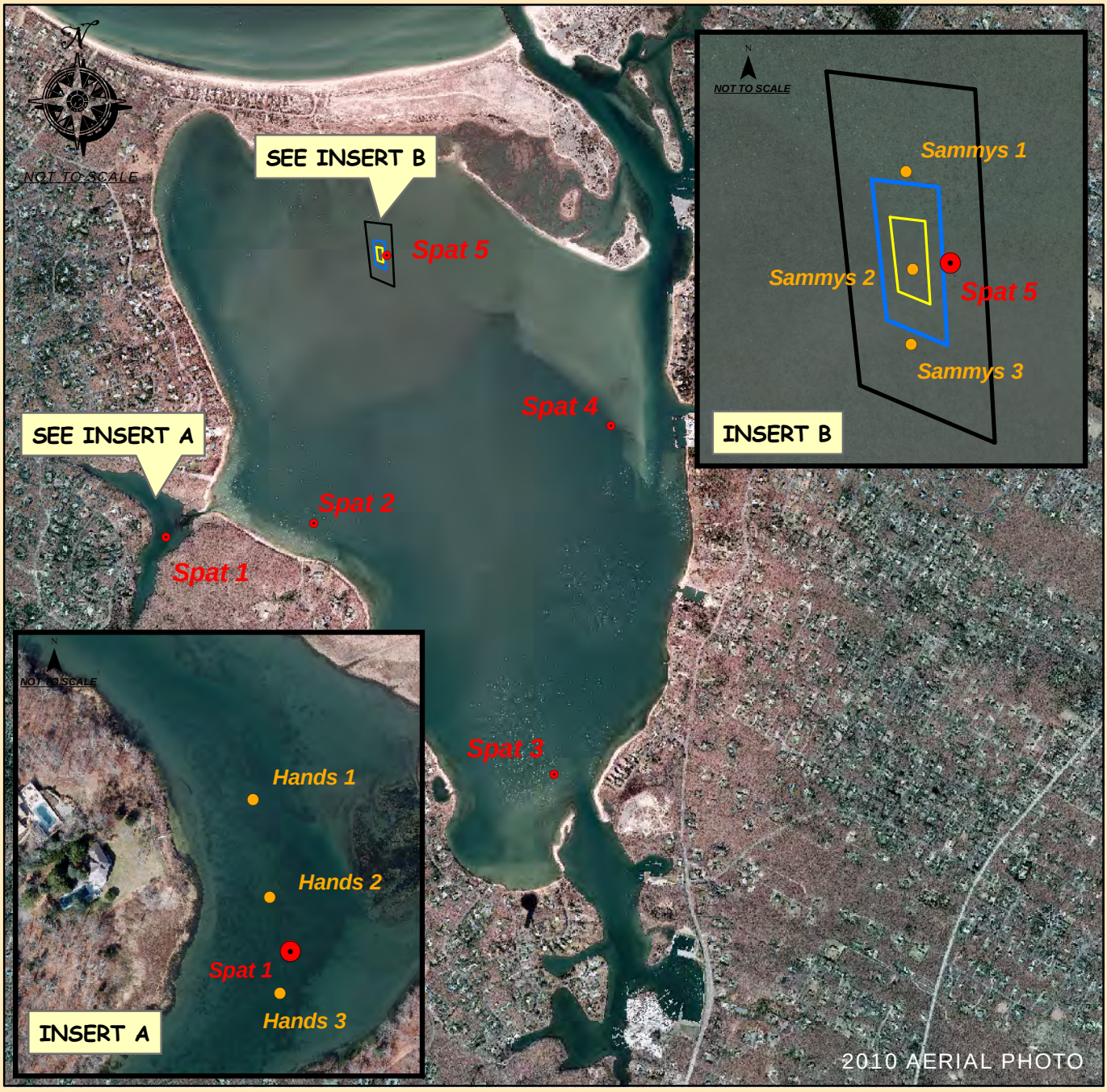
## **Appendix III: 2010 Scallop Spat Collection Site Maps**

Map 1: Three Mile Harbor
Map 2: Hog Creek
Map 3: Napeague Harbor

CARTOGRAPHY - RONN PIRRELLI - 1/12

# THREE MILE HARBOR

## 2010 Three Year Bay Scallop Restoration Program Evalution Sites




EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

**LEGEND**

- Spat Collection Stations
- Eelgrass Evaluation Sites
- Spawner Sanctuaries
- Spawner Buffers
- Suggested 1 Acre Buffer
- Suggested 5 Acre Buffer

*rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_10Three_Mile Harbor_Evaluation_Sites_10*

CARTOGRAPHY - RONN PIRRELLI - 1/12

# HOG CREEK

## 2010 Three Year Bay Scallop Restoration Program Evalution Sites


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***LEGEND***

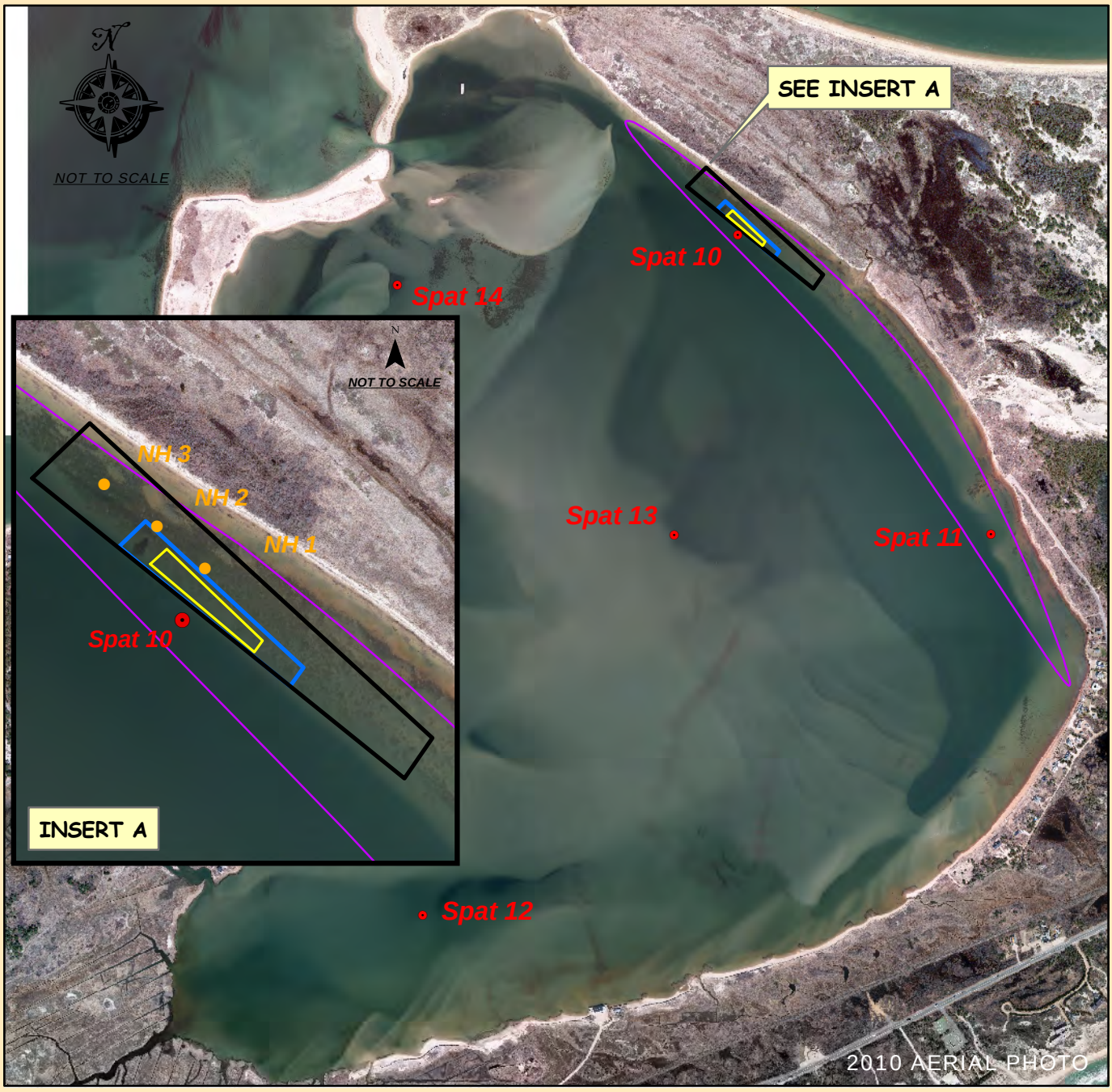
- Spat Collection Stations
- Eelgrass Evaluation Sites

*rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_10\Hog_Creek_Evaluation_Sites_10*

CARTOGRAPHY - RONN PIRRELLI - 1/12

# NAPEAGUE HARBOR

## 2010 Three Year Bay Scallop Restoration Program Evalution Sites




EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

**LEGEND**

- Spat Collection Stations
- Spawner Sanctuaries
- Spawner Buffers
- Suggested 1 Acre Buffer
- Suggested 5 Acre Buffer
- Eelgrass Sanctuary
- Eelgrass Evaluation Sites

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## 2011 Season Summary

Staffing continued to change in the department during 2011. Paul Hamilton was hired as an Environmental Aide in January. Kate Rossi-Snook began as a Bay Management Specialist in February. Vito Sisti replaced Paul as a seasonal Environmental Aide in May. Peter Topping rounded out the full-time staff of three as a Bay Management Specialist in June. We were lucky to have Shelby Joyce on board as a Student Intern for the summer, and were further aided by some part-time summer volunteers, namely Renee LaGarenne and Alex Cheston. As always, Jennie Gallaher (formerly Rice) continues to help out on a part-time basis, as does her husband, Brian, as a volunteer. Thanks to the quick learning curves of the new staff, we produced a nice crop during the 2011 season.

**Oysters:** Due to a slight change in setting technique, we realized some higher oyster setting rates of around 40% for two of three cohorts. We seeded 2.3 million oysters and overwintered ~55,000. Total value of marketable oysters (not including those overwinterwed): ~$132,000. Unfortunately we lost at least 1.1 million oysters during the Irene storm event in August.

**Clams:** Despite 2010's initial clam spawn making it through with flying colors, 2011 saw the opposite result. A nice crop left the hatchery only to die-off in the pre-nursery transition area. Despite this we managed to seed/overwinter 5.4 million clams with the remaining three spawns. Total value of marketable clams: ~$173,000. We lost our usual clam overwintering contractors, Richard and Doug Lester, so we did the overwintering work ourselves. Retrieval showed survival of about 63% of the 1.29 million clams stocked in 2010, resulting in approximately 813,000 two year old clams being seeded in 2011. Approximately 1.12 million clams were stocked into nine strings (2,500/bag) on the muddy bottom in Northwest Creek. In order to avoid potential theft, we GPS marked the overwinter strings and removed all buoys from the surface in winter 2012.

**Scallops:** The scallops that were overwintered in Pond of Pines resulted in a nice crop to go to the sanctuaries in the spring. We saw over 90% survival of the overwintered crop, thus seeding over 305,000 to two sanctuaries in the spring. Instead of seeding to three sanctuaries we decided to eliminate the Hands Creek sanctuary due to poor survival over the previous two seasons. In order to make up for the loss in area of the sanctuary we added 50% to the remaining two sanctuaries at the Sammy's Beach area of Three Mile Harbor and the east side of Napeague Harbor. Thanks to the voluntary efforts of Brian Gallaher and Charles Martin-Shields as well as some staff sharing with the Town Buildings and Grounds department, who lent us Paul Colombo, we were able to get the scallops out of Pond of Pines in due time in the spring despite being short-staffed with full hatchery production at the same time.

Unfortunately the 2011 scallop crop wasn't entirely successful, we saw high mortalities in the nursery stage and lost much of the crop. Due to extremely high spat settlement rates we were able to salvage some of the spat to add to the crop. We sent only about 140,000 scallops into overwintering blocks in Pond of Pines.

In all, approximately 7.7 million seed shellfish (valued at $327,448) were produced and seeded in 2011.

**Grants:** The extension to the Three Year Bay Scallop Restoration Project was awarded. Therefore, 2011 represented the first year of this extension. We continued to monitor sanctuary survival and gonad maturation during the season. Spatfall numbers continued to increase over previous years. We collected nearly 75,000 spat over the course of six spat collections. These numbers represent an 8415.6% increase in spatfall over 2008, the first year of the project, and a 371.2% increase over 2010.

The New York State Department of State grant project to restore/enhance hard clams and American oysters in Three Mile, Napeague, and Accabonac harbors began this year. The goal of the project is to raise and disseminate one million oysters and two million clams into Three Mile and Napeague harbors and 500,000 oysters and one million clams into Accabonac harbor over the course of 2 ½ years.

As usual, we continued to take part in community events and public education as well as maintain hatchery facilities and components and continue to enhance efficiency with new innovations.

## Oyster Production


**Kate overseeing an oyster spawn in the Hatchery**

### Oyster Spawn and Culture Summary

| | Oy1 Cohort | | Oy2 Cohort | | Oy3 Cohort | |
|---|---|---|---|---|---|---|
| | **Dates** | **# Oysters (x10$^6$)** | **Dates** | **# Oysters (x10$^6$)** | **Dates** | **# Oysters (x10$^6$)** |
| **Spawn** | 3/8/11 | 106.00 | 4/12/11 | 342.00 | 5/19/11 | 810.00 |
| **First to Set** | 3/23/11 | 4.26 | 4/27/11 | 5.00 | 6/3/11 | 6.60 |
| **Last to Set** | 4/1/11 | | 4/29/11 | | 6/6/11 | |
| **To Downwelling – Hatchery** | 4/4-4/11 | 1.87 | 5/4-5/6 | 1.85 | N/A* | N/A* |
| **Set Success** | 44% | | 37% | | 13% | |
| **To Upwelling – Nursery** | 4/15/11 | 1.35 | 5/9/11 | 2.55 | 6/10/11 | 0.88 |

| | All Cohorts | |
|---|---|---|
| | **Dates** | **# Oysters (x10$^6$)** |
| **Total to Upwelling** | 4/15-6/10 | **4.78** |
| **To Field** | 6/16-7/28 | **5.66** |
| **To Seed/Overwintering** | 8/2-11/14 | **2.30**** |

Notes

*Due to the fact that it was much later in the season, the Oy3 Cohort skipped the downwelling step and was moved directly from the hatchery to the nursery.

** At least 1,121,307 oysters were lost to the Irene storm event from 8/27/11 – 8/28/11.

**Oyster Hatchery Discards**

| Sieve Number | Approximate Size | Total Discards |
|---|---|---|
| 325 | >45µm | 81,500,000 |
| 270 | >53µm | 16,000,000 |
| 230 | >63µm | 10,180,000 |
| 200 | >75µm | 14,800,000 |
| 170 | >90µm | 36,200,000 |
| 140 | >106µm | 1,200,000 |
| 120 | >125µm | 3,800,000 |
| 100 | >150µm | 3,430,000 |
| 80 | >180µm | *430,000* |
| 70 | >212µm | *5,870,000** |
| 60 | >250µm | *2,740,000** |
| **TOTAL: 176,150,000** | | |
| ***Marketable Total: 9,040,000*** | | |

Notes
*8,610,000 oyster larvae (size #70 and #60) were donated to Project SERV for a restoration project.

**Oyster Nursery Discards and Culls**

**Oyster seed from an upweller at the Nursery; Photo courtesy of Elena Rossi-Snook**

| Sieve Size | Total |
|---|---|
| <#20 | 800,000 |
| <1.0 | 700,000 |
| **TOTAL: 1,500,000** | |

**Distribution of Oyster Seed**

| | Seed | Field Culls | Hurricane Preparation | from 2010 Cohort | Totals |
|---|---|---|---|---|---|
| **Accabonac Harbor** | 322,607 | 0 | 0 | 0 | **322,607** |
| **Hog Creek** | 34,740 | 0 | 0 | 0 | **34,740** |
| **Lake Montauk** | 97,622 | 0 | 0 | 0 | **97,622** |
| **Napeague Harbor** | 250,665 | 0 | 325,140 | 25,830 | **601,635** |
| **Three Mile Harbor** | 492,796 | 0 | 0 | 0 | **492,796** |
| **Pond of Pines Overwintering** | 12,963 | 42,255 | 0 | 0 | **55,218** |
| **New York State** | 206,784 | 352,000 | 0 | 0 | **558,784** |
| **Donations*** | 114,720 | 44,800 | 0 | 0 | **159,520** |
| **Totals** | **1,532,897** | **439,055** | **325,140** | **25,830** | **TOTAL: 2,322,922** |

Please refer to Appendix I (page 75) for the 2011 Seeding Maps for all harbors.

Notes

*206,000 oysters from seed (161,200) and field culls (44,800) were given to The Nature Conservancy (TNC) for growout on Shelter Island. The Hatchery received 46,480 of those oysters back from TNC after the growout season (seeded to Lake Montauk), therefore it can be deduced that 159,520 oysters were donated.

| | Average Size (mm) | Range |
|---|---|---|
| Overwintering | N/A | 3/8”-<1/2” |
| Field Culls | 22.9 | 12-38 |
| New York State | 32.0 | 14-51 |
| Hurricane Preparation | 34.3 | 16-49 |
| Donations | 36.7 | 12-64 |
| Seed | 41.3 | 19-70 |
| From 2010 Cohort | 45.0 | 30-64 |

**Oyster Overwintering**

| Overall Numbers at Stocking and Retrieval | |
|---|---|
| Oysters stocked 10/27/10 | 25,830 |
| Oysters retrieved 2011 | 25,830 |
| Average survival | 100% |
| Average size stocked | 3/8” |

| 2011 Overwinter Stocking | |
|---|---|
| Oysters stocked 11/14/11 | 55,218 |
| Overall average size stocked | 3/8”-<1/2” |

**Oyster Market Values**

| Stage | Size (mm) | Number | Value/1000 | Value | Total Value |
|---|---|---|---|---|---|
| Larvae | >180um | 9,040,000 | $2.00 | $18,080.00 | **$18,080** |
| Seed | 0.5-1.0 | 1,500,000 | $3.00 | $4,500.00 | **$129,979** |
| | 20.1-25.0 | 396,800 | $34.83 | $13,821.87 | |
| | 30.1-35.0 | 531,924 | $46.67 | $24,823.12 | |
| | 35.1-40.0 | 114,720 | $57.00 | $6,539.04 | |
| | 40.1-45.0 | 1,198,430 | $67.00 | $80,294.81 | |
| 2 Year Old Seed (2010 Cohort) | 40.1-45.0 | 25,830 | $67.00 | $1,730.61 | **$1,731** |
| Seeding & Handling | 20.1-45.0 | 2,267,704 | $2.00 | $4,535.41 | **$4,535** |
| **GRAND TOTAL VALUE: $154,324*** | | | | | |

Notes

*Value includes the oysters that were given to New York State, but does not include the oysters that were put into overwintering; overwintered oysters will be valued once they are seeded (ie: 2010 Cohort).

Market Value References

Frank M. Flower Sons Inc., Oyster Bay, NY. 2010 Seed Price List.
Noank Aquaculture Cooperative, Noank, CT and Southold, NY. 2011 Seed Price List.
Sargent's Cove Oyster Hatchery, Darien, CT. 2009 Sargent's Cove Oyster Seed Price List.
Town of Islip Shellfish Culture Facility, Islip, NY. 2011 Shellfish Seed Price List.

| 1990-2011 Oyster Market Values Distributed to New York State | | | | | |
|---|---|---|---|---|---|
| **Year** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| 1990 | No oysters produced | | | | **$0** |
| 1991 | 40-50 | 50,000 | $50.00 | $2,500.00 | **$2,500** |
| 1992 | 40-50 | 100,000 | $50.00 | $5,000.00 | **$5,000** |
| 1993 | 25-50 | 200,000 | $40.00 | $8,000.00 | **$8,000** |
| 1994 | 25-50 | 150,000 | $40.00 | $6,000.00 | **$6,000** |
| 1995 | 25-50 | 190,000 | $40.00 | $7,600.00 | **$7,600** |
| 1996 | 15-25<br>25-40 | 25,000<br>90,000 | $35.00<br>$40.00 | $875.00<br>$3,600.00 | **$4,475** |
| 1997 | 15-25<br>20-34 | 215,000<br>30,000 | $35.00<br>$40.00 | $7,525.00<br>$1,200.00 | **$8,725** |
| 1998 | 20-34 | 120,000 | $40.00 | $4,800.00 | **$4,800** |
| 1999 | 30-50 | 150,000 | $45.00 | $6,750.00 | **$6,750** |
| 2000 | 30-45 | 144,000 | $45.00 | $6,480.00 | **$6,480** |
| 2001 | 25-40 | 278,000 | $45.00 | $12,510.00 | **$12,510** |
| 2002 | 22-43 | 284,000 | $45.00 | $12,780.00 | **$12,780** |
| 2003 | 22-45 | 278,000 | $45.00 | $12,510.00 | **$12,510** |
| 2004 | No oysters to NYS | | | | **$0** |
| 2005 | No oysters to NYS | | | | **$0** |
| 2006 | No oysters to NYS | | | | **$0** |
| 2007 | 22-36<br>22-40 | 34,600<br>14,700 | $35.28<br>$36.88 | $1,220.69<br>$542.14 | **$1,763** |
| 2008 | 28-37<br>32-49 | 27,480<br>97,900 | $58.50<br>$76.50 | $1,607.58<br>$7,489.35 | **$9,097** |
| 2009 | 20-53 | 135,612 | $73.50 | $9,967.48 | **$9,967** |
| 2010 | 33-36 | 245,612 | $45.33 | $11,134.41 | **$11,134** |
| 2011 | 14-51 | 558,784 | $46.67 | $26,076.59 | **$26,077** |
| **GRAND TOTAL VALUE OF OYSTERS TO NYS: $156,168*** | | | | | |

Notes

*The New York State oyster values for 2010 and 2011 listed here are included in the total oyster market values for those years.

## Hard Clam Production

**Preparing for a clam spawn at the Hatchery (left); A female clam emitting its eggs (right); Photos courtesy of Elena Rossi-Snook**

### Hard Clam Spawn and Culture Summary

| | C1 Cohort | | C2 Cohort | | C3 Cohort | |
|---|---|---|---|---|---|---|
| | **Dates** | **# Clams ($x10^6$)** | **Dates** | **# Clams ($x10^6$)** | **Dates** | **# Clams ($x10^6$)** |
| **Spawn** | 2/22/11 | 47.00 | 3/29/11 | 58.50 | 5/5/11 | 179.00 |
| **First to Set** | 3/4/11 | 4.63 | 4/6/11 | 2.02 | 5/13/11 | 1.96 |
| **Last to Set** | 3/14/11 | | 4/20/11 | | 5/25/11 | |
| **To Transition Tanks – Hatchery** | 3/25/11 | 6.38 | 4/25-5/6 | 3.74 | 6/1/10 | 220,000** |
| **To Upwelling – Nursery** | 4/7/11 | N/A* | 4/29-5/9 | 4.78 | 6/2-6/6 | 2.93 |

| | All Cohorts | |
|---|---|---|
| | **Dates** | **# Clams ($x10^6$)** |
| **Total to Upwelling** | 4/7-6/6 | **7.71** |
| **To Field** | 6/29-7/26 | **4.48** |
| **To Seed/Overwintering** | 8/6-11/1 | **5.40** |

Notes

*The C1 Cohort was not sieved when it was moved from the transition tanks to the nursery; very few were alive.

** Due to the fact that it was much later in the season, most of the C3 cohort skipped the transition tank step and was moved directly from the hatchery to the Nursery.

## Hard Clam Hatchery Discards

**Kate sieving clams from the set tanks in the Hatchery;**
**Photo courtesy of Elena Rossi-Snook**

| Sieve Number | Approximate Size | Total Discards |
|---|---|---|
| 200 | >75µm | 24,500,000 |
| 170 | >90µm | 42,330,000 |
| 140 | >106µm | 22,590,100 |
| 120 | >125µm | 24,507,000 |
| 100 | >150µm | 2,863,750 |
| 80 | >180µm | *110,000* |
| 70 | >212µm | *126,000* |
| 60 | >250µm | *109,125* |
| 50 | >300µm | *506,000* |
| 40 | >425µm | *75,000* |
| **TOTAL: 117,716,975** | | |
| ***Marketable Total: 926,125*** | | |

## Hard Clam Nursery Discards and Culls

There were no clam nursery discards or culls recorded for the 2011 season.

**Distribution of Hard Clam Seed**

| | Seed | Field Culls | Hurricane Preparation | from 2010 Cohort | Totals |
|---|---|---|---|---|---|
| **Accabonac Harbor** | 853,752 | 0 | 0 | 149,424 | **1,003,176** |
| **Hog Creek** | 0 | 0 | 0 | 40,110 | **40,110** |
| **Lake Montauk** | 651,040 | 217,728 | 0 | 221,500 | **1,090,268** |
| **Napeague Harbor** | 112,056 | 0 | 863,328 | 259,183 | **1,234,567** |
| **Three Mile Harbor** | 0 | 0 | 1,227,680 | 142,756 | **1,370,436** |
| **Northwest Creek Overwintering** | 1,120,384 | 0 | 0 | 0 | **1,120,384** |
| **Cooperative Research*** | 174,000 | 179,520 | 0 | 0 | **353,520** |
| **Totals** | **2,911,232** | **397,248** | **2,091,008** | **812,973** | **TOTAL: 6,212,461** |

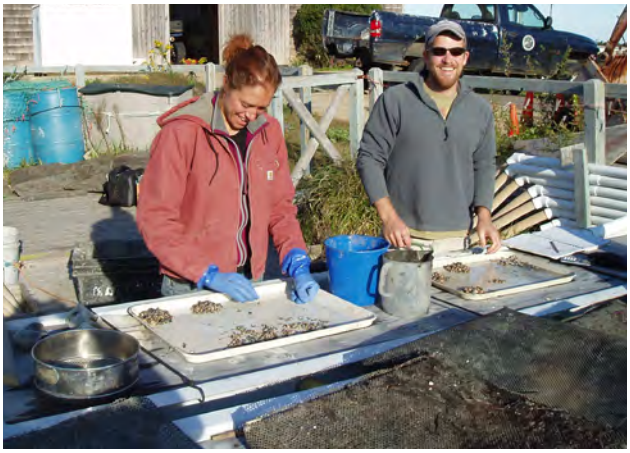
Please refer to Appendix I (page 75) for the 2011 Seeding Maps for all harbors.

Notes
*353,520 clams from seed (174,000) and field culls (179,520) were distributed to Dr. Chester Zarnoch, Baruch College of CCNY (refer to the *Cooperative Research* section on page 56 for more information).

| | Average Size (mm) | Range |
|---|---|---|
| Field Culls | 7.2 | 6-9 |
| Cooperative Research | 8.0 | 6-10 |
| Hurricane Preparation | 10.9 | 8-14 |
| Seed | 11.1 | 8-15 |
| Overwintering | 14.1 | 8-20 |
| From 2010 Cohort | 17.0 | 8-32 |

**Hard Clam Overwintering**

| Overall Numbers at Stocking and Retrieval | |
|---|---|
| Clams stocked 9/20/10-9/29/10* | 1,292,380 |
| Clams retrieved 10/4/11-10/11/11 | 812,973 |
| Average survival | 63% |



**Kate and Pete counting and measuring 2010 cohort overwintered clams**

Notes
*Clams were stocked in 2010 on 6 strings at 2,500/bag, and on 4 strings at 2,700/bag.

| Average Clam Size (mm) | |
|---|---|
| Overall average size stocked | 12.0 |
| Overall average size retrieved | 17.0 |
| Increase in growth | 42% |

| 2011 Overwinter Stocking | |
|---|---|
| Clams stocked 10/25/11-11/2/11* | 1,120,384 |
| Overall average size stocked | 14.1mm |

Notes
*Clams were stocked in 2011 on 9 strings at 2,500/bag.

**Hard Clam Market Values**

| 2011 Hard Clam Market Values | | | | | |
|---|---|---|---|---|---|
| **Stage** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| Larvae | >180µm | 926,125 | $2.00 | $1,852.25 | **$1,852** |
| Seed | 6.1-8.0<br>10.1-12.0 | 571,248<br>3,707,856 | $22.67<br>$31.83 | $12,948.29<br>$118,033.42 | **$130,982** |
| 2 Year Old Seed (2009 Cohort) | 16.1-20.0 | 812,973 | $49.42 | $40,174.42 | **$40,174** |
| Seeding & Handling | 6.1-20.0 | 5,092,077 | $2.00 | $10,184.15 | **$10,184** |
| **GRAND TOTAL VALUE: $183,192*** | | | | | |

Notes
*Value does not include the clams that were put into overwintering; overwintered clams will be valued once they are seeded (ie: 2010 Cohort).

Market Value References
Frank M. Flower Sons Inc., Oyster Bay, NY. 2010 Seed Price List.
Noank Aquaculture Cooperative, Noank, CT and Southold, NY. 2011 Seed Price List.
Town of Islip Shellfish Culture Facility, Islip, NY. 2011 Shellfish Seed Price List.

| 1990-2011 Hard Clam Market Values Distributed to New York State | | | | | |
|---|---|---|---|---|---|
| **Year** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| 1990 | 12-15 | 25,000 | $17.00 | $425.00 | **$425** |
| 1991 | 8-10 | 400,000 | $16.00 | $6,400.00 | **$6,400** |
| 1992 | 8-10 | 1,600,000 | $16.00 | $25,600.00 | **$25,600** |
| 1993 | 8-18 | 800,000 | $30.00 | $24,000.00 | **$24,000** |
| 1994 | 8-18 | 301,000 | $30.00 | $9,030.00 | **$9,030** |
| 1995 | 10-15 | 400,000 | $30.00 | $12,000.00 | **$12,000** |
| 1996 | 6-10<br>10-14 | 800,000<br>200,000 | $23.00<br>$30.00 | $18,400.00<br>$6,000.00 | **$24,400** |
| 1997 | 2-9<br>9-22 | 575,000<br>450,000 | $15.00<br>$30.00 | $8,625.00<br>$13,500.00 | **$22,125** |
| 1998 | 6-9<br>7-12 | 656,000<br>84,000 | $23.00<br>$26.00 | $15,088.00<br>$2,184.00 | **$17,272** |
| 1999 | 10-20 | 270,000 | $37.00 | $9,990.00 | **$9,990** |
| 2000 | No clams produced | | | | **$0** |
| 2001 | 10-13 | 660,000 | $27.00 | $17,820.00 | **$17,820** |
| 2002 | 3-4<br>8-12<br>9-11<br>9-15<br>10-13<br>10-19 | 70,000<br>506,000<br>88,000<br>128,000<br>104,000<br>88,000 | $13.00<br>$22.00<br>$24.00<br>$24.00<br>$25.00<br>$28.00 | $910.00<br>$11,132.00<br>$2,112.00<br>$3,072.00<br>$2,600.00<br>$2,464.00 | **$22,290** |
| 2003 | 10-22 | 681,300 | $29.00 | $19,757.70 | **$19,758** |
| 2004 | No clams to NYS | | | | **$0** |
| 2005 | No clams to NYS | | | | **$0** |
| 2006 | No clams to NYS | | | | **$0** |
| 2007 | 5-7<br>9-14 | 1,380,000<br>377,900 | $20.00<br>$29.25 | $27,600.00<br>$11,053.58 | **$38,654** |
| 2008 | 10-16 | 276,156 | $35.00 | $9,665.46 | **$9,665** |
| 2009 | 7-14<br>13-23 | 551,008<br>73,420 | $39.25<br>$66.17 | $21,627.06<br>$4,858.20 | **$26,485** |
| 2010 | 9-20 | 577,543 | $36.50 | $21,080.32 | **$21,080** |
| 2011 | No clams to NYS | | | | **$0** |
| **GRAND TOTAL VALUE OF HARD CLAMS TO NYS: $306,994*** | | | | | |

Notes

*The New York State clam value for 2010 listed here is included in the total clam market value for that year.

## Bay Scallop Production

**Spawning scallops in the Hatchery**

### Bay Scallop Spawn and Culture Summary

| | S1 Cohort | | S2 Cohort | | S3 Cohort | |
|---|---|---|---|---|---|---|
| | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** |
| **Spawn** | 6/6/11 | 1.80 | 6/7/11 | 1.44 | 6/9/11 | N/A* |
| **To Downwelling – Nusery** | 6/15-6/20 | 0.16 | 6/22-6/24 | 0.25 | N/A | N/A* |
| | **S4 Cohort** | | **S5 Cohort** | | **S6 Cohort** | |
| | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** | **Dates** | **# Scallops (x10$^6$)** |
| **Spawn** | 6/14/11 | 4.80 | 6/21/11 | 5.50 | 6/28/11 | 2.70 |
| **To Downwelling – Nursery** | 6/29-7/1 | 0.03 | 7/4-7/8 | 0.27 | 7/4/11 | N/A** |

| | **All Cohorts** | |
|---|---|---|
| | **Dates** | **# Scallops (x10$^6$)** |
| **Total to Downwelling** | 6/15-7/8 | **0.71** |
| **Total to Upwelling** | 6/22-7/26 | **0.51** |
| Collected from Spat | 8/11/11 | 0.03$^{\dagger}$ |
| **Total to Field** | 7/15-8/10 | **0.18** |
| **Total to Overwintering** | 11/14/11 | **0.14** |

Notes
*Spawning for the S3 Cohort was very weak and did not yield anything worth keeping.
**The S6 Cohort was lost due to a mistake during drain downs.
$^{\dagger}$Scallops from spat collections were kept and added to the Hatchery's scallop production.

**Bay Scallop Hatchery Discards**

| Sieve Number | Approximate Size | Total Discards |
|---|---|---|
| 230 | >63µm | 2,130,000 |
| 170 | >90µm | 52,000 |
| 140 | >106µm | 2,090,000 |
| 120 | >125µm | 66,750 |
| 100 | >150µm | 102,000 |
| **TOTAL: 4,440,750** | | |

**Bay Scallop Nursery Discards and Culls**

| Sieve Size | Total |
|---|---|
| 100 | 72,500 |
| 80 | *11,000* |
| 70 | *55,500* |
| 60 | *90,000* |
| 50 | *127,500* |
| 40 | *55,320* |
| **TOTAL: 411,820** | |
| ***Marketable Total: 339,320*** | |

**Distribution of Bay Scallop Seed**

**Scallops that will be used as broodstock await their turn at the Nursery; Photo courtesy of Elena Rossi-Snook**

| | Seed (2010 Cohort) |
|---|---|
| **Napeague Sanctuary** | 154,420 |
| **Three Mile Sanctuary** | 151,200 |
| **TOTAL: 305,620** | |

| | Average Size (mm) | Range |
|---|---|---|
| Seed (2010 Cohort) | 33.8 | 27-40 |

Please refer to Appendix I (page 75) for the 2011 Seeding Maps for all harbors.

**Bay Scallop Overwintering**

| Overall Numbers at Stocking and Retrieval | |
|---|---|
| Scallops stocked 10/25/10-10/26/10 | 336,000 |
| Scallops retrieved 4/14/11-5/3/11 | 305,620 |
| Percent survival | 91% |
| Average size stocked | 27.3mm |
| Average size retrieved | 33.8mm |
| Percent growth | 24% |

| 2011 Overwinter Stocking | |
|---|---|
| Scallops stocked 11/14/11 | 139,200 |
| Overall average size stocked | N/A |

**Bay Scallop Market Values**

| 2011 Bay Scallop Market Values | | | | | |
|---|---|---|---|---|---|
| **Stage** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| Larvae | >180µm | 339,320 | $7.50 | $2,544.90 | **$2,545** |
| 2 Year Old Seed (2010 Cohort) | 30.1-35.0 | 305,620 | $45.00 | $13,752.90 | **$13,753** |
| Seeding & Handling | 30.1-35.0 | 305,620 | $2.00 | $611.24 | **$611** |
| **GRAND TOTAL VALUE: $16,909*** | | | | | |

Notes

*Value does not include the scallops that were put into overwintering; overwintered scallops will be valued once they are seeded (ie: 2010 Cohort).

Market Value References

Frank M. Flower Sons Inc., Oyster Bay, NY. 2006 Seed Price List.
Noank Aquaculture Cooperative, Noank, CT and Southold, NY. 2007, 2011 Seed Price Lists.

| 1990-2011 Bay Scallop Market Values Distributed to New York State | | | | | |
|---|---|---|---|---|---|
| **Year** | **Size (mm)** | **Number** | **Value/1000** | **Value** | **Total Value** |
| 1990 | No scallops produced | | | | **$0** |
| 1991 | No scallops produced | | | | **$0** |
| 1992 | 22-28 | 20,000 | $43.00 | $860.00 | **$860** |
| 1993 | 15-40 | 67,000 | $50.00 | $3,350.00 | **$3,350** |
| 1994 | 20-40 | 242,000 | $50.00 | $12,100.00 | **$12,100** |
| 1995 | 20-40 | 80,000 | $50.00 | $4,000.00 | **$4,000** |
| 1996 | 15-25<br>25-35 | 11,000<br>95,500 | $38.25<br>$46.75 | $420.75<br>$4,464.63 | **$4,885** |
| 1997 | 17-40<br>20-38<br>27-42 | 49,000<br>12,000<br>26,000 | $50.00<br>$47.50<br>$50.00 | $2,450.00<br>$570.00<br>$1,300.00 | **$4,320** |
| 1998 | 15-30<br>27-42 | 7,000<br>14,000 | $45.00<br>$50.00 | $315.00<br>$700.00 | **$1,015** |
| 1999 | 36-60 | 36,800 | $55.00 | $2,024.00 | **$2,024** |
| 2000 | 35-52 | 12,600 | $55.00 | $693.00 | **$693** |
| 2001 | No scallops to NYS | | | | **$0** |
| 2002 | 32-60 | 7,200 | $55.00 | $396.00 | **$396** |
| 2003 | 30-52 | 12,000 | $55.00 | $660.00 | **$660** |
| 2004 | 19-44<br>35-55 | 29,000<br>131,000 | $50.00<br>$55.00 | $1,450.00<br>$7,205.00 | **$8,655** |
| 2005 | 30-49 | 160,000 | $52.50 | $8,400.00 | **$8,400** |
| 2006 | 32-39 | 160,000 | $47.50 | $7,600.00 | **$7,600** |
| 2007 | 3-5<br>25-40 | 100,000<br>20,000 | $17.50<br>$45.00 | $1,750.00<br>$900.00 | **$2,650** |
| 2008 | 6-13 | 70,000 | $25.00 | $1,750.00 | **$1,750** |
| 2009 | 1.5-2<br>6-12 | 500,000<br>42,000 | $11.25<br>$24.00 | $5,625.00<br>$1,008.00 | **$6,633** |
| 2010 | No scallops to NYS | | | | **$0** |
| 2011 | No scallops to NYS | | | | **$0** |
| **GRAND TOTAL VALUE OF BAY SCALLOPS TO NYS: $69,991** | | | | | |

**GRAND TOTAL OF ALL SHELLFISH DISSEMINATED IN STATE WATERS TO DATE (return on a grant of $186,000 in 1986):**

**$533,153**

## Cooperative Research

### Suffolk County Water Quality Grant: 2008-2013

Three Year Extension of the Bay Scallop Restoration Project

Participants
East Hampton Shellfish Hatchery
East Hampton Trustees
Suffolk County, New York

***Project Description and Timeline***

Hatchery raised scallops (~300,000) will be grown by the East Hampton Shellfish Hatchery each year and overwintered in Pond of Pines, Amagansett. In early spring of the following year, the scallops will be compactly dispersed in two low traffic areas that will act as sanctuaries and be marked accordingly – a section of Three Mile Harbor off Sammy's Beach and a section in the eastern portion of Napeague Harbor. Scallop growth and gonad index (documenting spawning) will be monitored bi-weekly from May through October and scallop survival in the sanctuaries will be assessed on a monthly basis from May to November. Introduced scallops will also be evaluated for spawning success using spat collectors dispersed in a surrounding area or areas and checked for spat on a regular basis. Spat collectors will also be deployed away from seeded areas for purposes of comparison.

If, as a result of the seedings, one of the areas indicates an excellent spawn, and if upon further evaluation, the spawn develops into a significant set, the Trustees might consider a restriction of harvesting for a period of time in that area. It is hoped that the project will provide the conditions necessary for natural population recruitment, resulting in the re-introduction of native scallop populations to surrounding areas.

This project is funded in part by a grant awarded by the Suffolk County Department of Environment and Energy.

East Hampton Shellfish Hatchery's role: contractor

Results of the project are below. Maps of the scallop sanctuaries and spat collection sites can be found in Appendix II (page 82).

The following timeline lists when specific tasks related to the grant were accomplished throughout the year.

# 2011 Three Year Bay Scallop Restoration Project Timeline

## 1st Quarter
1/1/11-3/31/11

| Period Dates | Tasks |
|---|---|
| 1/3-1/9 | |
| 1/10-1/16 | |
| 1/17-1/23 | |
| 1/24-1/30 | |
| 1/31-2/6 | |
| 2/7-2/13 | weekly inspections |
| 2/14-2/20 | of overwinter site |
| 2/21-2/27 | |
| 2/28-3/6 | |
| 3/7-3/13 | |
| 3/14-3/20 | |
| 3/21-3/27 | |
| 3/28-4/3 | Set up Napeague Sanctuary |

## 2nd Quarter
4/1/11-6/30/11

| Period Dates | Tasks |
|---|---|
| 4/4-4/10 | |
| 4/11-4/17 | |
| 4/14 | Retrieve overwintered scallops, seed Napeague |
| 4/18-4/24 | |
| 4/19 | Retrieve overwintered scallops, seed Napeague |
| 4/21 | Retrieve overwintered scallops, seed Sammy's |
| 4/25-5/1 | |
| 4/26 | Retrieve overwintered scallops, seed Sammy's |
| 4/28 | Retrieve overwintered scallops, seed Napeague |
| 5/2-5/8 | |
| 5/3 | Retrieve overwintered scallops, seed Sammy's<br>Gonad Assessment (#1) |
| 5/9-5/15 | |
| 5/10 | Survival Survey (#1)<br>Gonad Assessment (#2) |
| 5/16-5/22 | |
| 5/23-5/29 | |
| 5/26 | Gonad Assessment (#3) |
| 5/30-6/5 | |
| 6/5 | Deploy Spat 1 (Three Mile and Hog Creek) |
| 6/6-6/12 | |
| 6/6 | Spawn Cohort 1 |
| 6/7 | Spawn Cohort 2<br>Deploy Spat 1 (Napeague) |
| 6/9 | Survival Survey (#2)<br>Gonad Assessment (#4)<br>Spawn Cohort 3 |
| 6/13-6/19 | |
| 6/14 | Spawn Cohort 4 |
| 6/15 | Begin move to downwelling |
| 6/20-6/26 | |
| 6/20 | Deploy Spat 2 (Napeague) |
| 6/21 | Spawn Cohort 5<br>Deploy Spat 2 (Three Mile and Hog Creek) |
| 6/22 | Gonad Assessment (#5)<br>Begin move to upwelling |
| 6/27-7/3 | |
| 6/28 | Spawn Cohort 6 |

## 3rd Quarter
7/1/11-9/30/11

| Period Dates | Tasks |
|---|---|
| 7/4-7/10 | |
| 7/8 | Complete move to downwelling |
| 7/11-7/17 | |
| 7/11 | Survival Survey (#3)<br>Gonad Assessment (#6) |
| 7/15 | Begin move to field: scallops to 5 boxes |
| 7/18-7/24 | |
| 7/20-7/25 | Collect 1/Deploy Spat 3 |
| 7/25-7/31 | |
| 7/26 | Complete move to upwelling |
| 7/27 | Gonad Assessment (#7)<br>Scallops to 5 boxes |
| 8/1-8/7 | |
| 8/4 | Scallops to 10 boxes |
| 8/8-8/14 | |
| 8/8-8/10 | Collect 2/Deploy Spat 4 |
| 8/10 | Complete move to field |
| 8/12 | Survival Survey (#4)<br>Gonad Assessment (#8) |
| 8/15-8/21 | |
| 8/18 | Scallops to 5 boxes |
| 8/22-8/28 | |
| 8/29-9/4 | |
| 8/31 | Transfer to 186 pearl nets |
| 9/2 | Gonad Assessment (#9) |
| 9/5-9/11 | |
| 9/6-9/7 | Collect 3/Deploy Spat 5 |
| 9/12-9/18 | |
| 9/16 | Survival Survey (#5)<br>Gonad Assessment (#10) |
| 9/19-9/25 | |
| 9/19-9/20 | Collect 4/Deploy Spat 6 |
| 9/21-9/22 | Transfer to 181 pearl nets |
| 9/26-10/2 | |
| 9/30 | Gonad Assessment (#11) |

## 4th Quarter
10/1/11-12/31/11

| Period Dates | Tasks |
|---|---|
| 10/3-10/9 | |
| 10/10-10/16 | |
| 10/12-10/13 | Collect Spat 5 |
| 10/17-10/23 | |
| 10/17 | Survival Survey (#6)<br>Gonad Assessment (#12) |
| 10/17-10/19 | Transfer to 119 blocks |
| 10/24-10/30 | |
| 10/31-11/6 | |
| 11/3-11/4 | Collect Spat 6 |
| 11/7-11/13 | |
| 11/7 | Survival Survey (#7)<br>Gonad Assessment (#13) |
| 11/14-11/20 | |
| 11/14 | Transfer blocks to overwinter |
| 11/21-11/27 | |
| 11/28-12/4 | |
| 12/5-12/11 | |
| 12/12-12/18 | |
| 12/19-12/25 | |
| 12/26-1/1 | |

***Gonad Assessment***

As in previous years, the 2011 gonad indices at each scallop sanctuary peaked during the same sampling period (Figure 1).

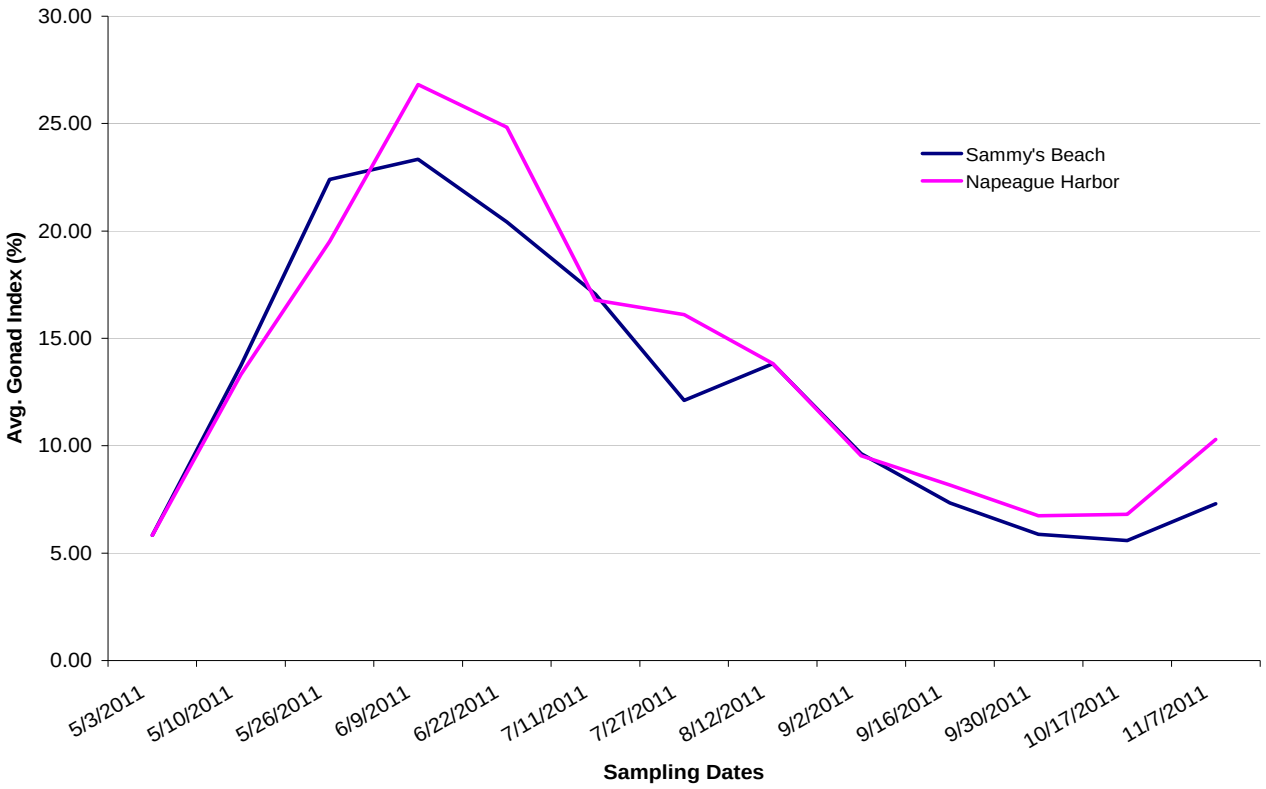



**Figure 1:** 2011 average gonad to body weight ratios (gonad index) for scallop sanctuaries

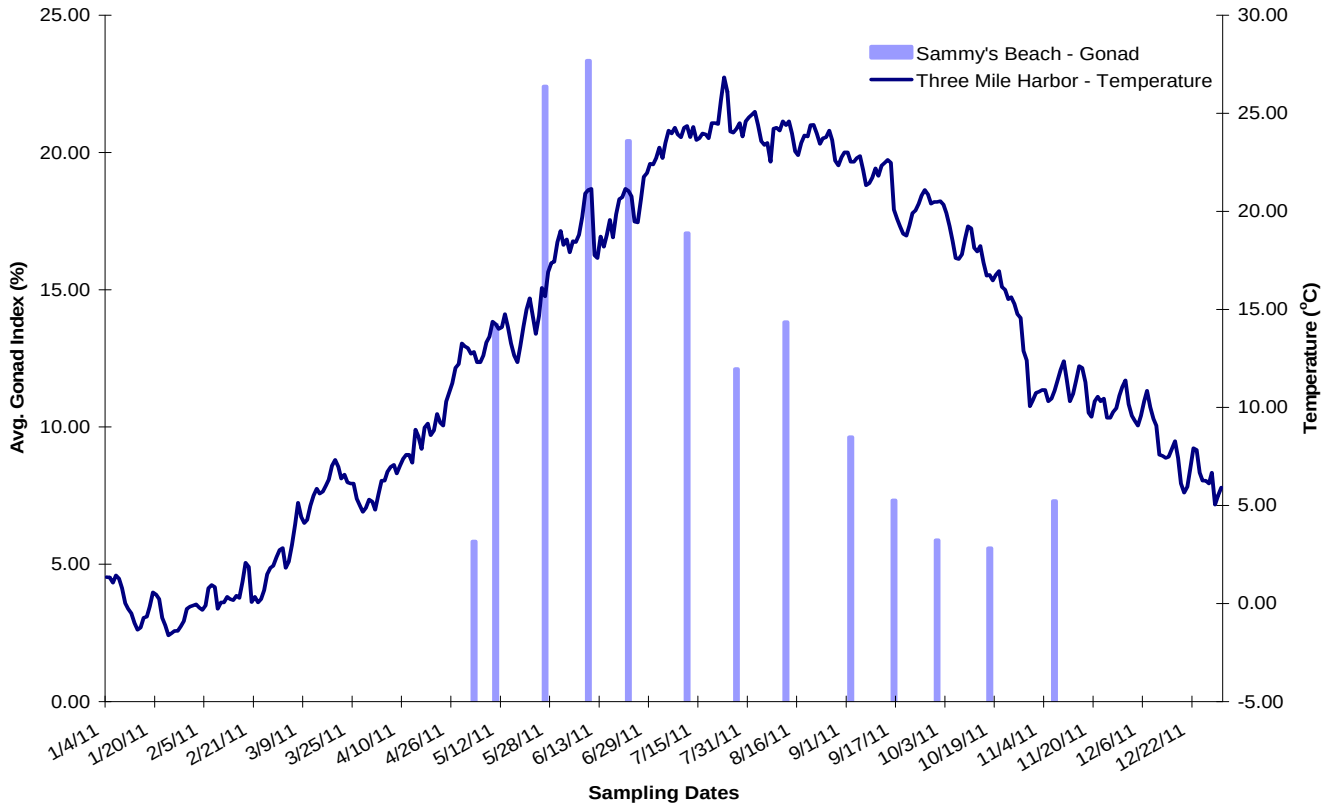



**Figure 2:** 2011 gonad index at Sammy's Beach scallop sanctuary vs. average daily temperatures for Three Mile Harbor

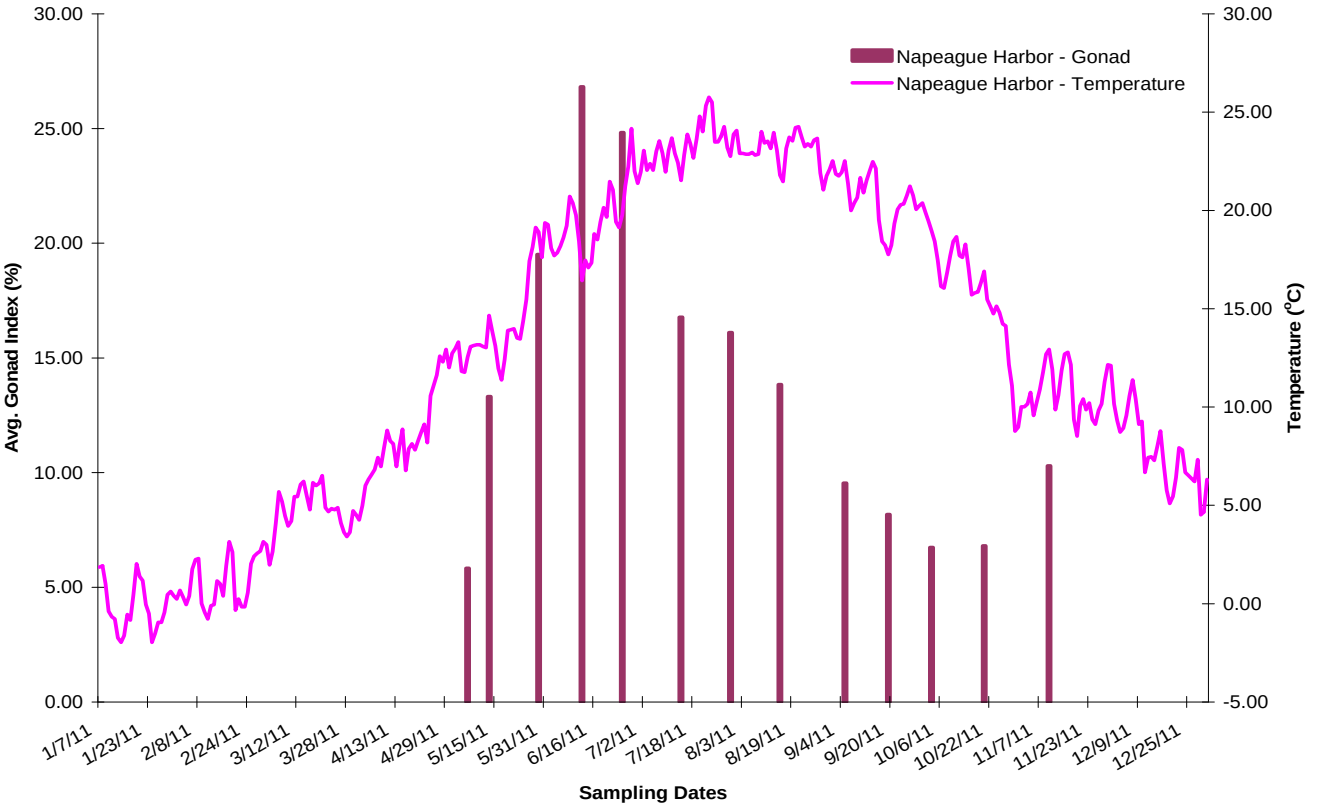



**Figure 3:** 2011 gonad index at the Napeague scallop sanctuary vs. average daily temperatures for Napeague Harbor

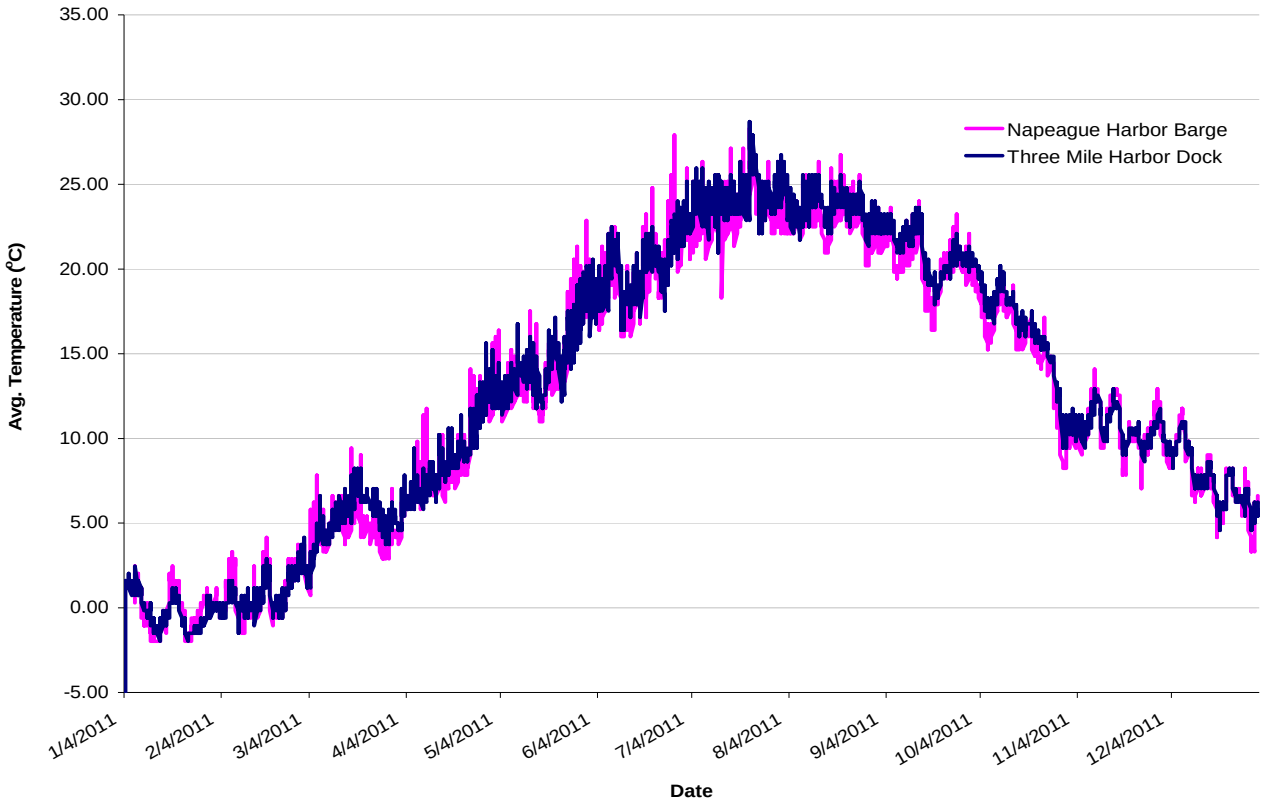



**Figure 4:** 2011 daily temperatures at the nursery and field growing sites

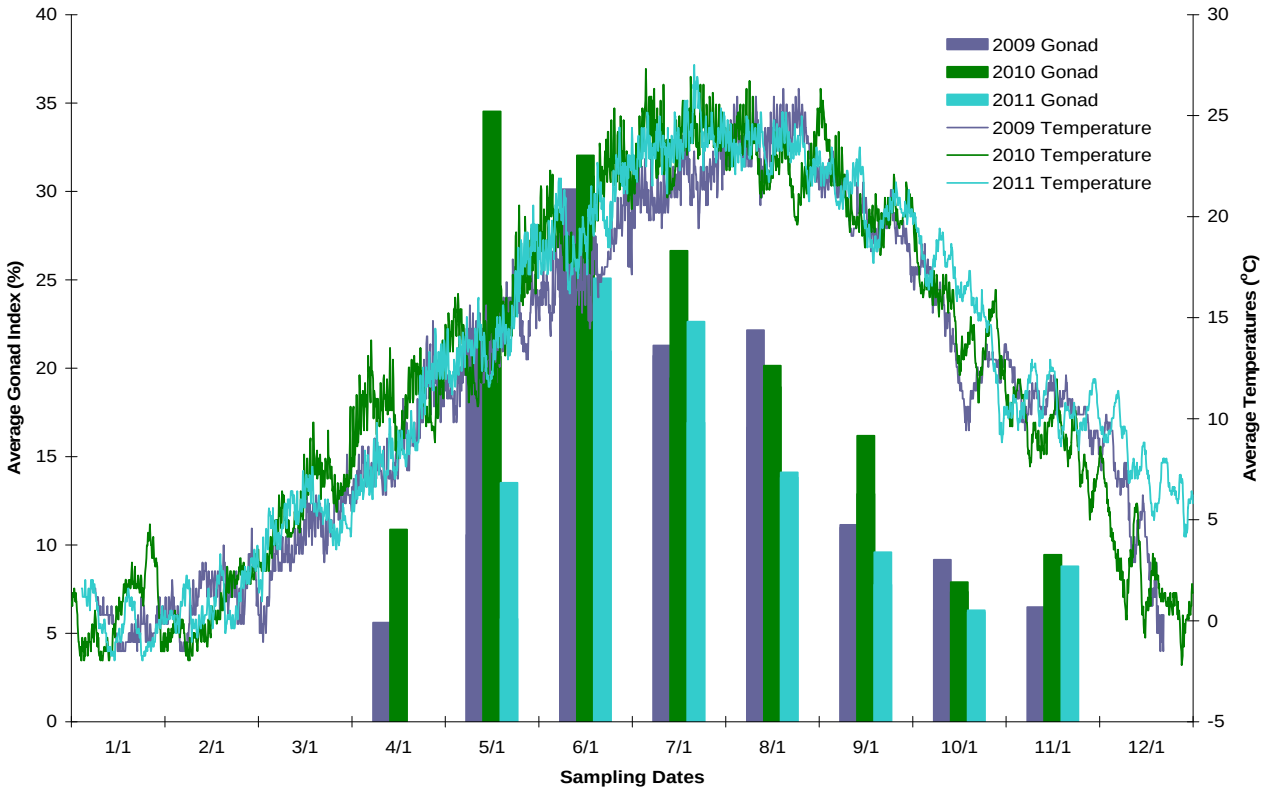



**Figure 5:** 2009-2011 average gonad index vs. average daily temperatures for Three Mile and Napeague Harbors

### *Spat Collection*

We observed unprecedented numbers of scallop spatfall in 2011. Spat collected from Three Mile Harbor alone was more than double that which was collected from all harbors in 2010, There was an 8,416% increase in total spat collected over the first year of the research grant in 2008 and a 371% increase over 2010 (Table 1). This year all collection sites, Three Mile, Napeague, and Hog Creek, peaked at the second round of spat collection (Figure 6).

**Table 1:** Percent change in the total number of spat collected over the previous year and the start of the project (2008).

| Year | Total Spat Collected | % Change over Previous Year | % Change over 2008 |
|---|---|---|---|
| 2008 | 876 | N/A | N/A |
| 2009 | 6500 | 642% | 642% |
| 2010 | 15831 | 144% | 1707% |
| 2011 | 74597 | 371% | 8416% |

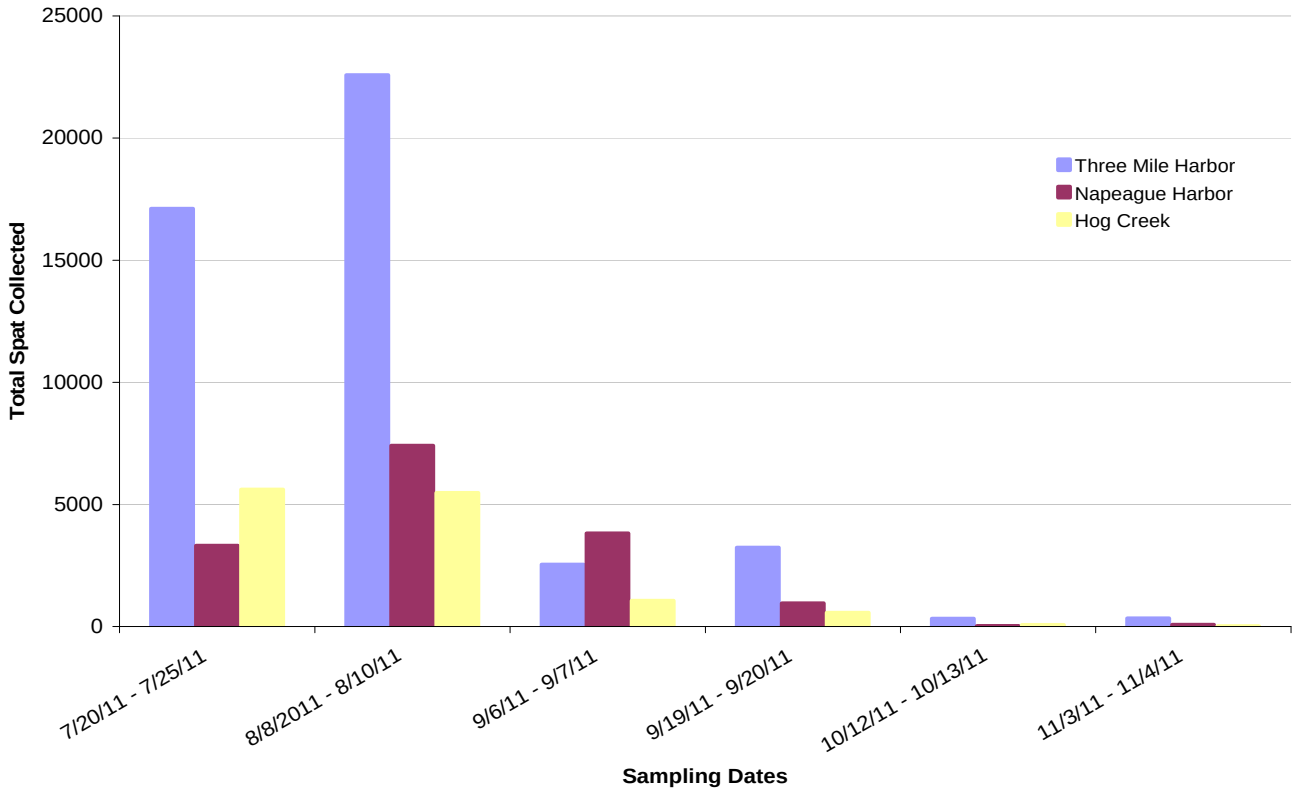



**Figure 6:** 2011 scallop spat collection, all harbors

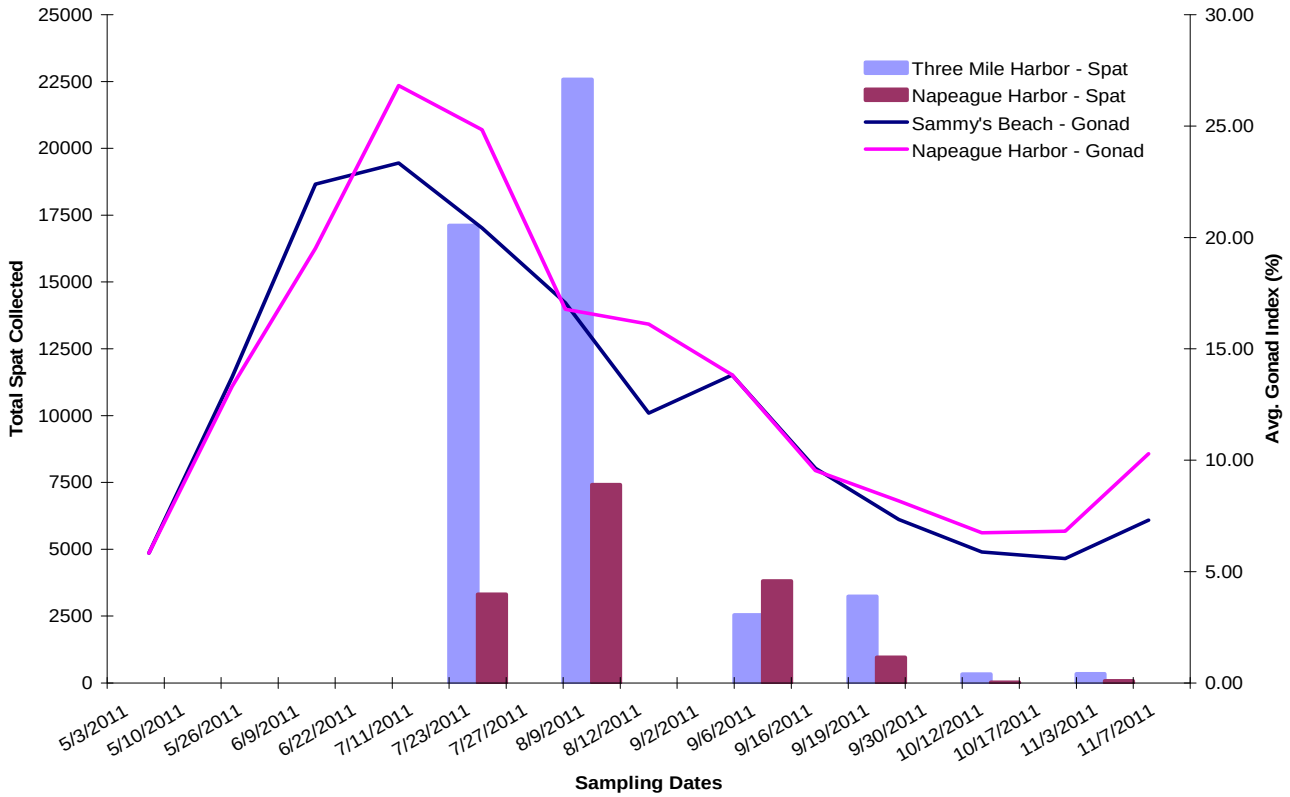
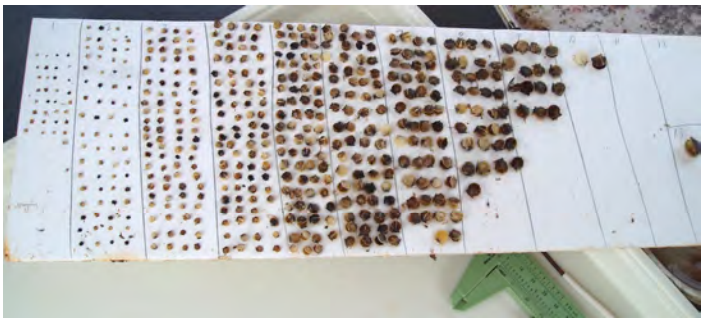



**Figure 7:** 2011 gonad index vs. spat collection for Three Mile and Napeague Harbors



**Scallops from a single spat collector, arranged by size from 1 to 13 mm**

**Shelby and Alex count scallops from spat collectors**

Figures 8-10 illustrate spat collection data at each collection station and sample date for 2011.

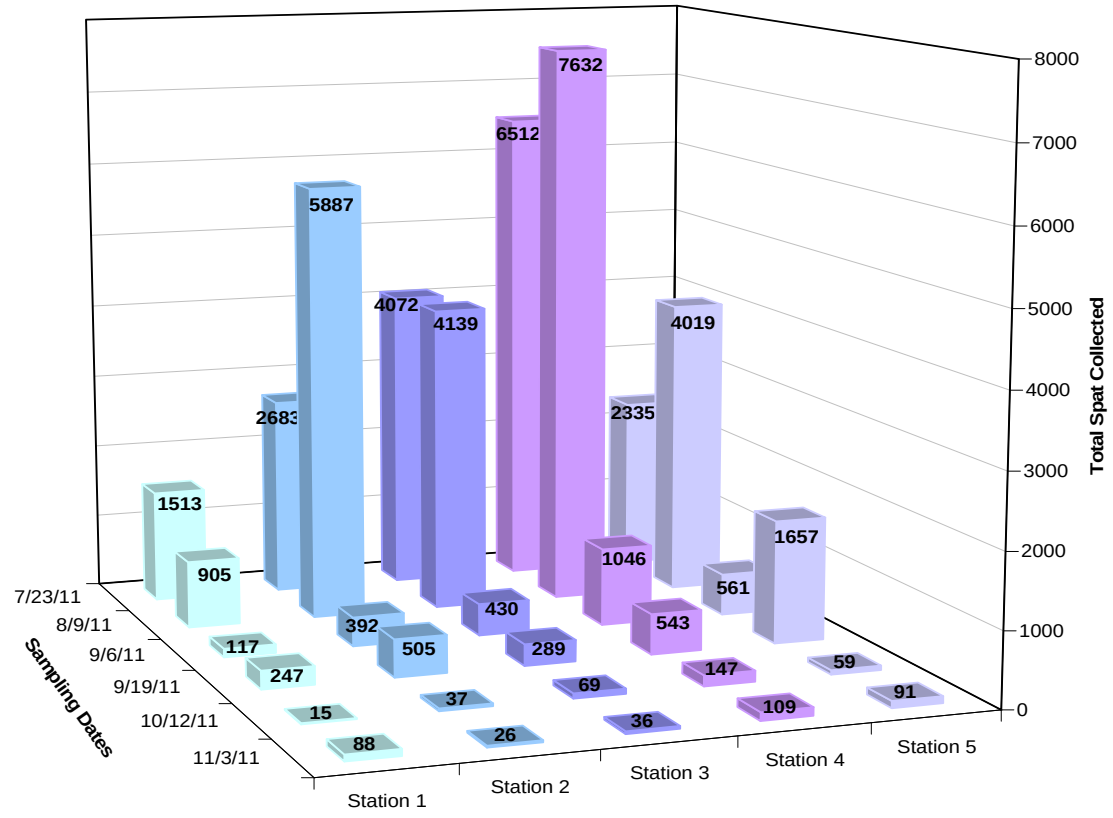



**Figure 8:** 2011 Three Mile Harbor scallop spat collection by station and sampling date

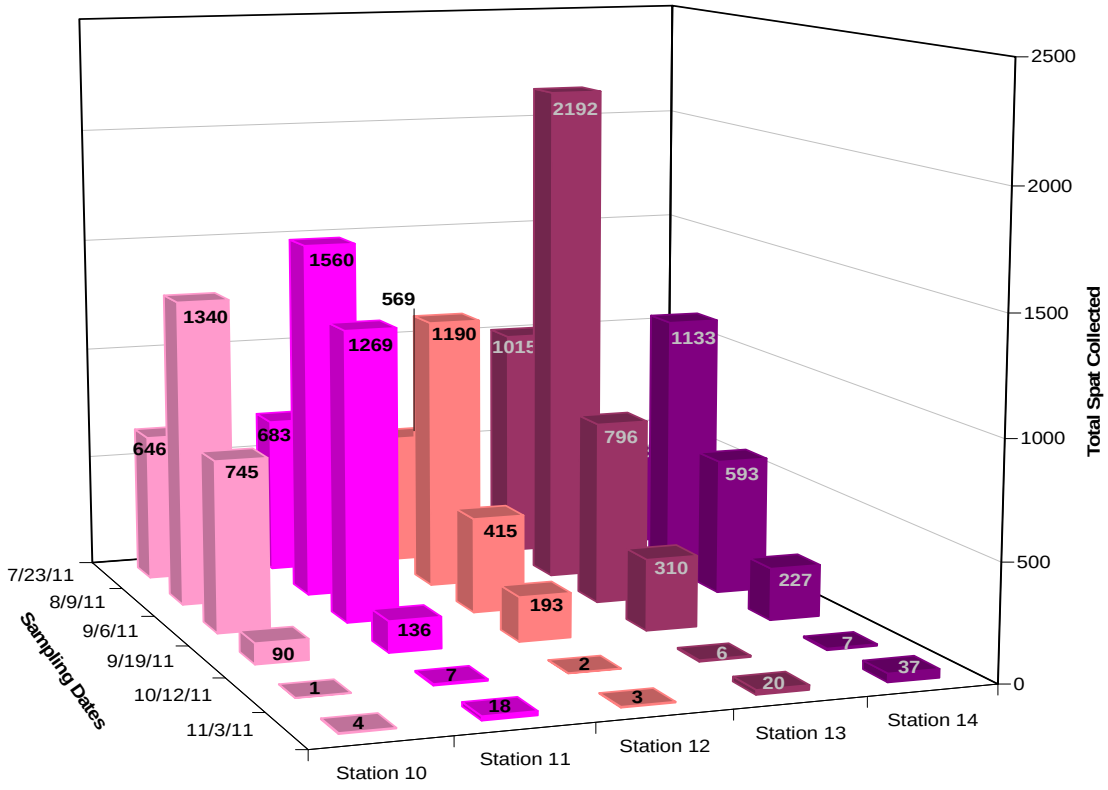



**Figure 9:** 2011 Napeague Harbor scallop spat collection by station and sampling date

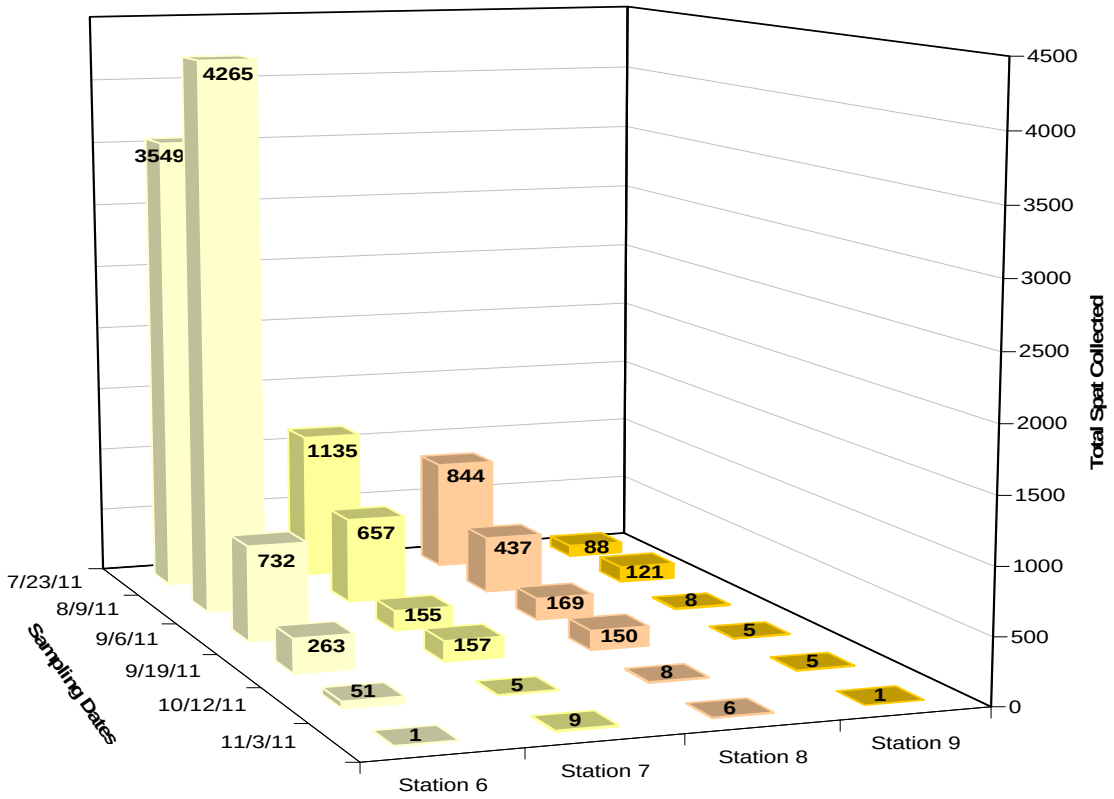



**Figure 10:** 2011 Hog Creek scallop spat collection by station and sampling date

Please refer to Appendix II (page 82) for the 2011 Scallop Spat Collection Site Maps.

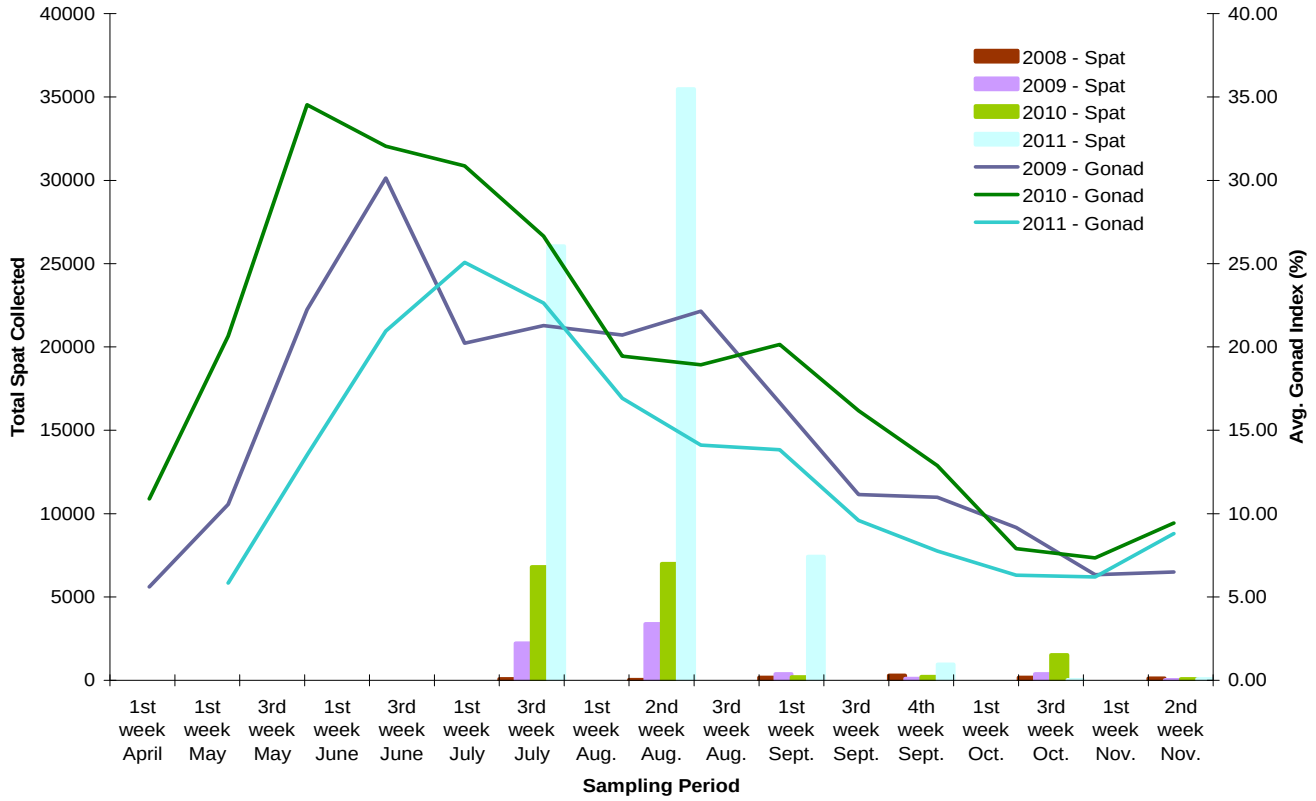



**Figure 11:** 2009-2011 average gonad index and total spat collected for all harbors combined

Overall, spat collection over the course of the research grant (2008-2011) illustrates a consistent increase in the number of spat collected from year to year (Table 1). Meanwhile the 2011 overall average gonad index fell 31% from 2010, and 14% from 2009 (Table 2). However, as mentioned in the 2010 report, different individuals were processing scallops for gonad index data each year, 2009-2011. The actual gonad index may differ due to changes in staffing, but all other things considered equal, the timing of peak gonad index shouldn't necessarily be affected by a difference in processing technique. Hopefully we'll have the same individual processing the animals for gonad indices through the end of the project. It should be noted that the gonad index was not determined in 2008 because it was the first year of research and just spat collection was conducted that year.

**Table 2:** Percent change in the overall average gonad index over the previous year and the start of the project

| Year | Overall Avg. Gonad Index | % Change over Previous Year | % Change over 2009 |
|---|---|---|---|
| 2009 | 15.26 | N/A | N/A |
| 2010 | 19.14 | 25% | 25% |
| 2011 | 13.19 | -31% | -14% |

### *Scallop Sanctuary Survival Surveys*

By the final dive on November 7th, the Sammy's Beach scallop sanctuary had a survival rate of 13%. However, survival at the Napeague sanctuary dropped to 0% by the 5th dive (Table 3). Many empty shells were found in and around the sanctuary, while many blue claw crabs and whelks were present, leading us to suspect that predation was the main cause of the drop in survival at Napeague.

2011 resulted in the overall highest survival rate at the Sammy's Beach sanctuary since the first year of survival surveys in 2009, while Napeague sanctuary survival has been consistently dropping over the last three years. As mentioned above, this drop in survival could be explained by predation, but it is also important to realize that some of the scallops moved themselves outside of the sanctuary either on their own or due to wave action.

**Table 3:** Percent survival over the course of a season each year for each sanctuary site

| | Year | Seeding/m2 | Dive #1 | Dive #2 | Dive #3 | Dive #4 | Dive #5 | Dive #6 | Dive #7 |
|---|---|---|---|---|---|---|---|---|---|
| **Sammy's Beach** | 2009 | 80 | 32% | 45% | 33% | 27% | 13% | 10% | 12% |
| | 2010 | 92 | 12% | 10% | 8% | 2% | 1% | 1% | 1% |
| | 2011 | 151 | 31% | 26% | 20% | 13% | 18% | 14% | 13% |
| **Napeague Harbor** | 2009 | 80 | 40% | 27% | 17% | 8% | 7% | 9% | 6% |
| | 2010 | 92 | 26% | 13% | 5% | 1% | 2% | 1% | 0% |
| | 2011 | 154 | 32% | 6% | 1% | 2% | 0% | 0% | 0% |
| **Hand's Creek*** | 2009 | 80 | 45% | 39% | 31% | 8% | 1% | 1% | 1% |
| | 2010 | 92 | 14% | 5% | 0% | N/A | N/A | N/A | N/A |
| | 2011 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Notes

*Hand's Creek surveys #4-6 for 2010 were not completed, and the sanctuary was not continued for 2011, because there was 0% survival and a reduction in eelgrass.

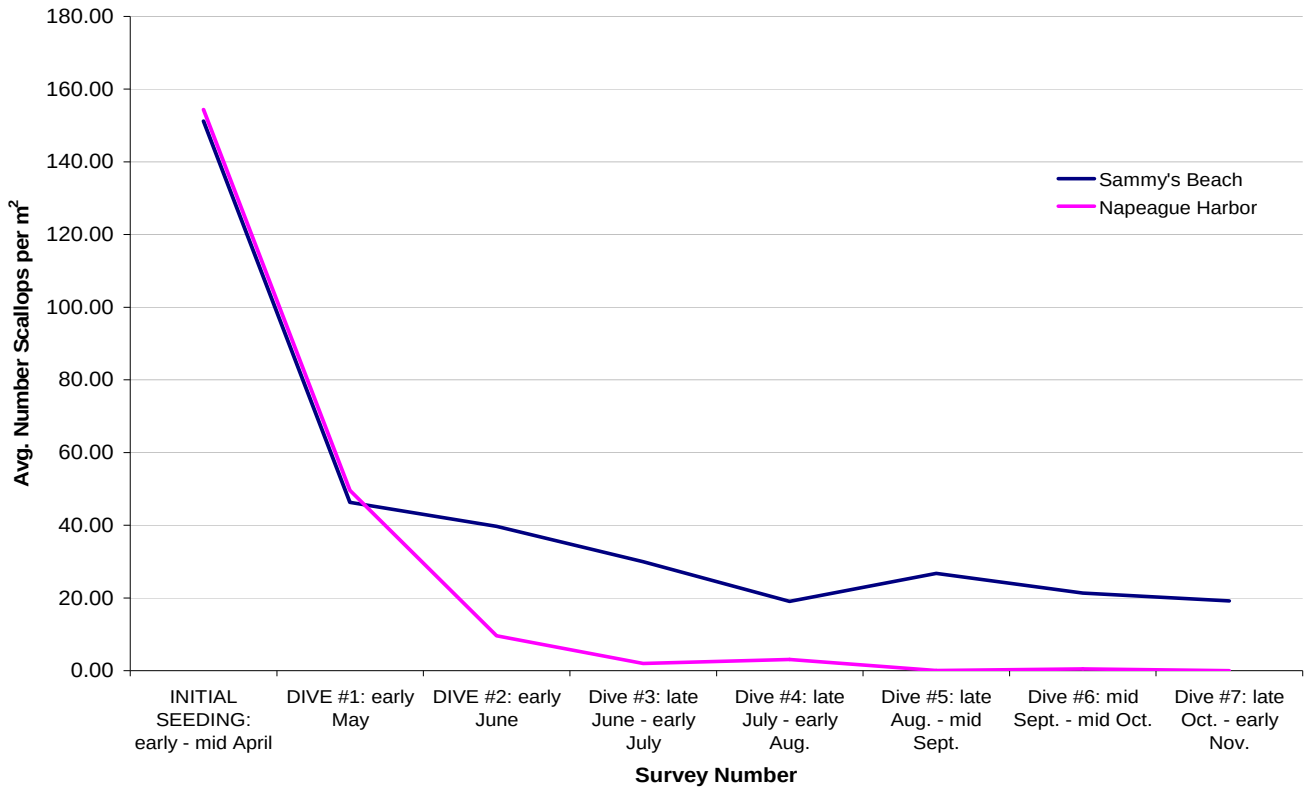



**Figure 12:** 2011 scallop sanctuary survival surveys for each scallop sanctuary

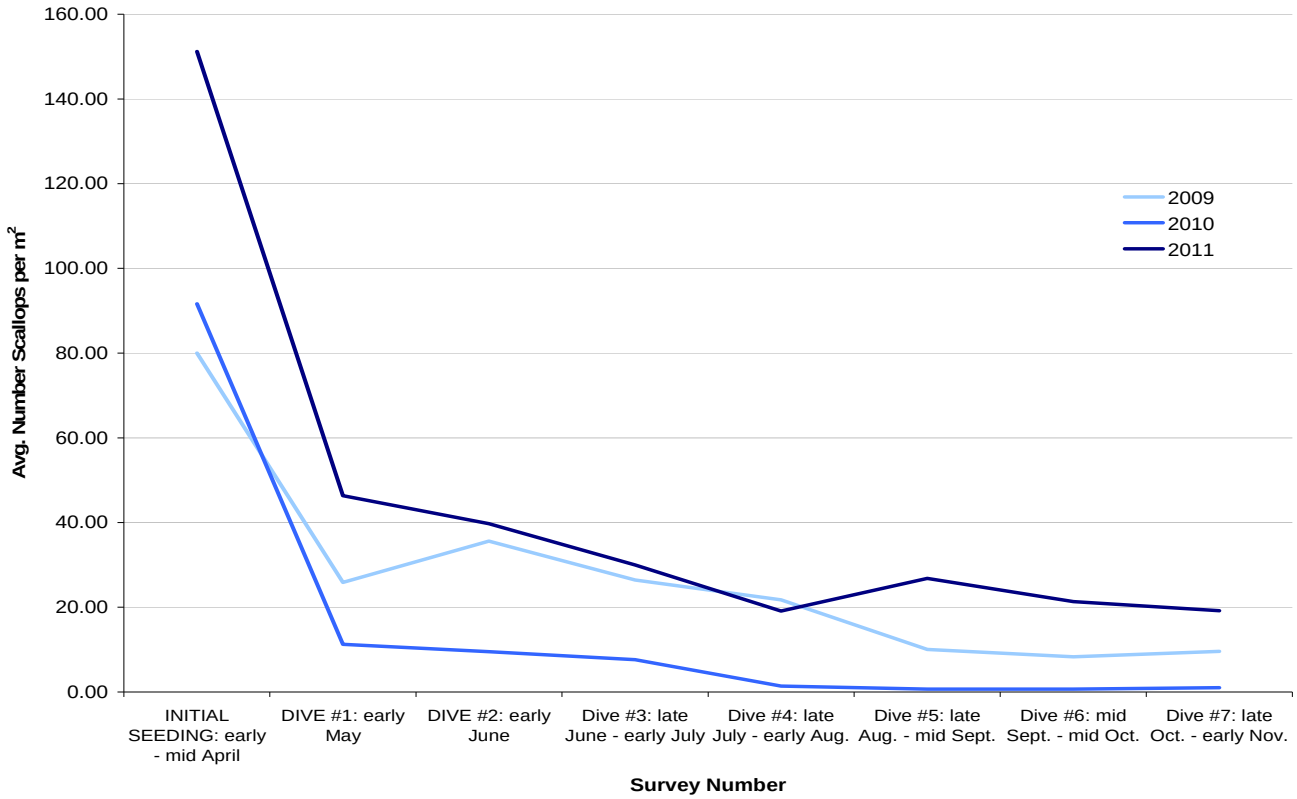



**Figure 13:** 2009-2011 Sammy's Beach scallop sanctuary survival surveys

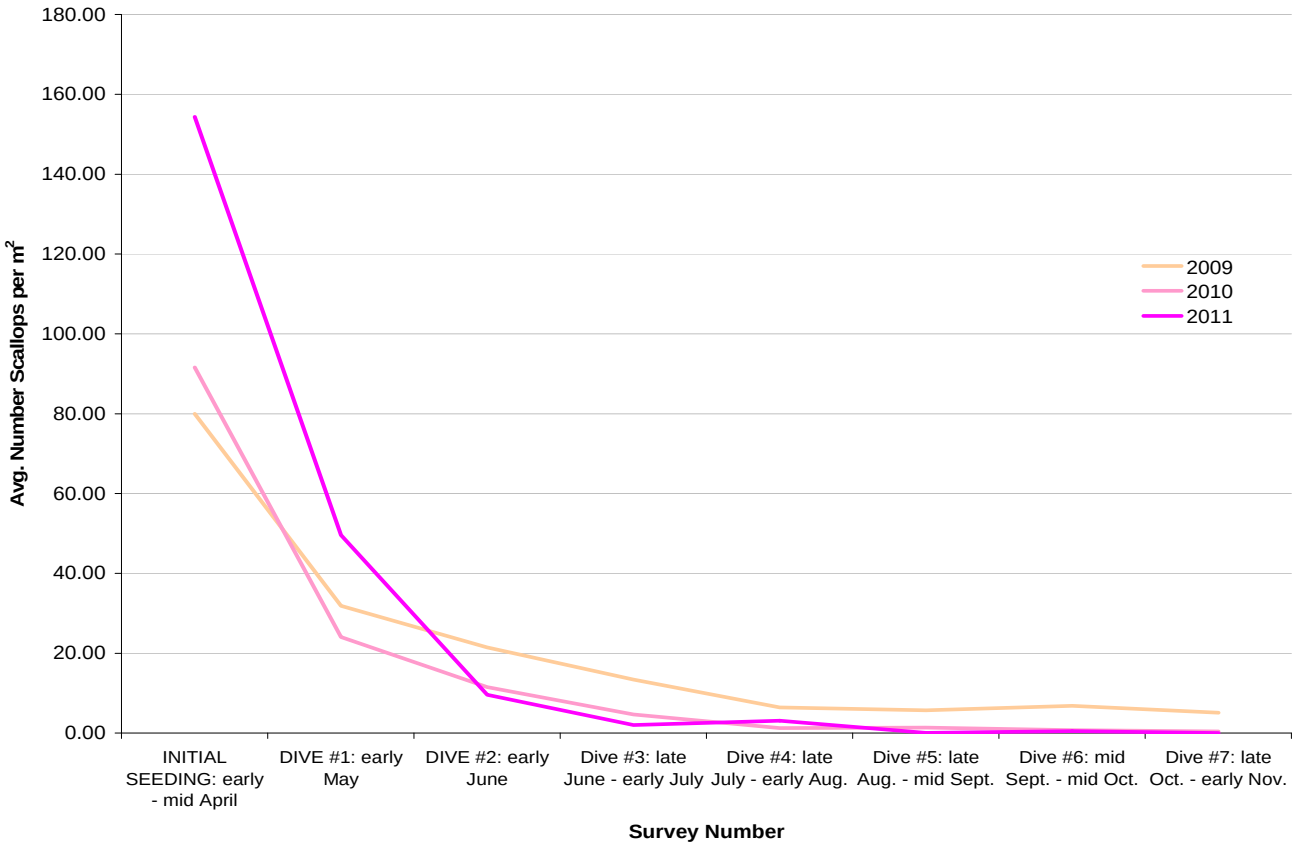



**Figure 14:** 2009-2011 Napeague scallop sanctuary survival surveys

### *Scallop Bug Dives*

Scallop bug dives were conducted at spat collection stations by the Long Island University dive team, led by Steve Tettlebach. The following are the results from Napeague Harbor.

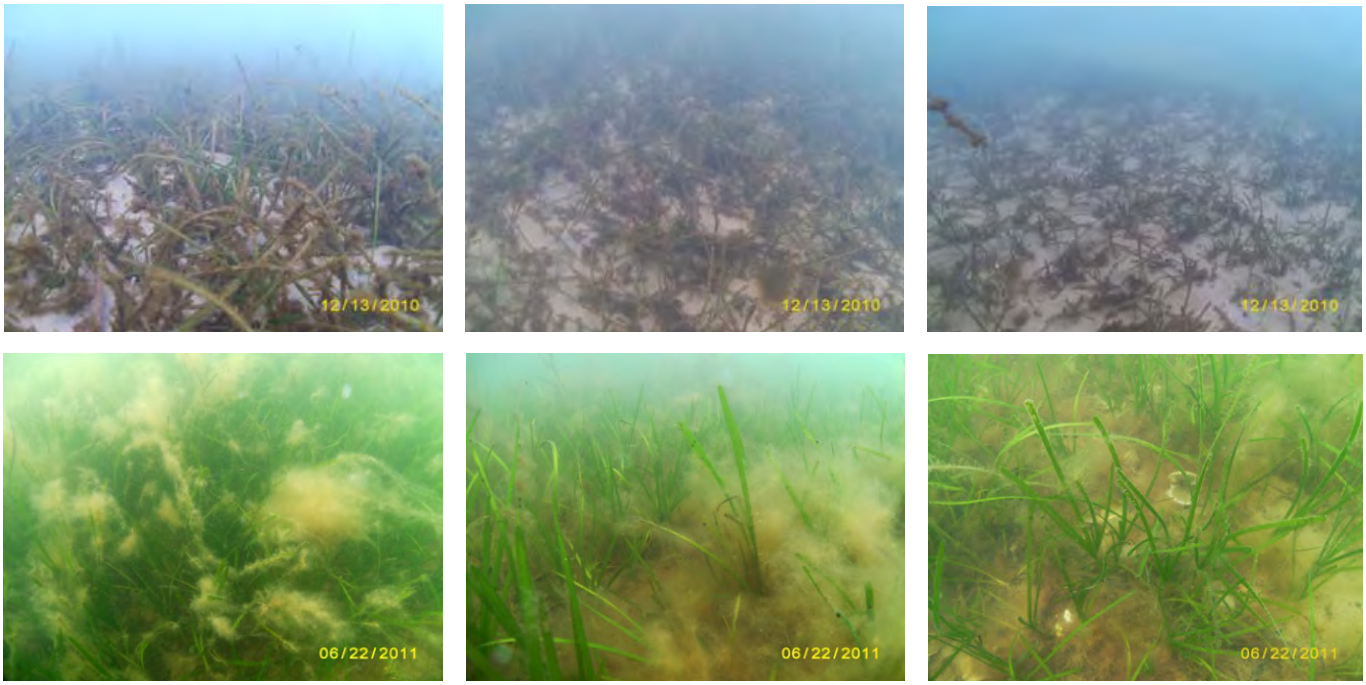
| 2011 LIU Scallop Bug Dives | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Station** | **Transect** | **Adult Scallops** | | | **Bug Scallops** | | | **Sizes (mm)** | **Bottom Type** | **Predators** |
| | | Live | Dead | Skunks | Live | Dead | Skunks | | | |
| 10 | N | 39 | 0 | 0 | 0 | 0 | 0 | Range: 36<br>Average: 36 | Mud/Sand - eelgrass bed N and E transects | 10 *Libinia*; 2 *P. pollicaris*; 3 knob whelk |
| | S | 29 | 0 | 0 | 1 | 0 | 0 | | | |
| | E | 3 | 0 | 0 | 1 | 0 | 0 | | | |
| | | **Total/m$^2$: 1.42** | | | **Total/m$^2$: 0.04** | | | | | |
| 11 | N | 0 | 0 | 0 | 3 | 0 | 0 | Range: 28-46<br>Average: 35 | Sand | 15 *Libinia*; 1 rock crab; 3 knob whelk |
| | S | 0 | 0 | 0 | 1 | 0 | 0 | | | |
| | W | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | | **Total/m$^2$: 0** | | | **Total/m$^2$: 0.08** | | | | | |
| 12 | NE | 0 | 0 | 0 | 128 | 1 | 4 | Range: 23-52<br>Average: 39 | N/A | 1 *Libinia*; 1 knob whelk; 58+ mud crabs |
| | SE | 0 | 0 | 0 | 40 | 0 | 2 | | | |
| | W | 0 | 0 | 0 | 89 | 0 | 8 | | | |
| | | **Total/m$^2$: 0** | | | **Total/m$^2$: 5.44** | | | | | |
| 13 | N | 0 | 0 | 0 | 10 | 0 | 0 | Range: 37-52<br>Average: 43 | N/A | 5 *Libinia*; 8 knob whelk; 11 mud crabs; 3 *P. pollicaris*; 1 oyster drill |
| | NW | 0 | 0 | 0 | 17 | 0 | 0 | | | |
| | S | 0 | 0 | 0 | 15 | 0 | 2 | | | |
| | | **Total/m$^2$: 0** | | | **Total/m$^2$: 0.88** | | | | | |
| 14 | N | 0 | 0 | 0 | 22 | 0 | 0 | Range: 30-50<br>Average: 42 | Sand - Codium cover | 4 *Libinia*; 2 knob whelk; 9 mud crabs |
| | S | 0 | 0 | 0 | 121 | 1 | 8 | | | |
| | W | 0 | 0 | 0 | 27 | 2 | 4 | | | |
| | | **Total/m$^2$: 0** | | | **Total/m$^2$: 3.70** | | | | | |

### *Eelgrass Survey*

Overall, the mean eelgrass shoot coverage in Napeague Harbor has shown a slight decline since the Fall 2008 survey, but it has continued to follow seasonal increases and decreases. The Spring/Summer 2011 survey, however, showed a further decrease in mean coverage when it should have increased. Hopefully this is not a precursor to a similar event to that which occurred at Hand's Creek.

The mean coverage at Hand's Creek was also following the seasonal increases and decreases, but at the Fall 2010 survey, the eelgrass coverage plummeted to 0/m$^2$. It increased slightly at the Spring/Summer 2011 survey, but it has a considerable way to go before recovery.

There are no graphs or photos for Sammy's Beach because the area has not had any eelgrass shoots since the start of the research. However, there is considerable algae cover at the Sammy's Beach sanctuary (mostly *Codium* fragile). As we have learned over the years, the Sammy's Beach sanctuary results in the best scallop survival and Three Mile Harbor the highest rate of spat collection of all three harbors in the project.




**Napeague Harbor eelgrass survey stations 1, 2, and 3 during the Fall 2010 (top row) and Spring/Summer 2011 (bottom row) survey periods; Photos courtesy of Cornell Cooperative Extension**

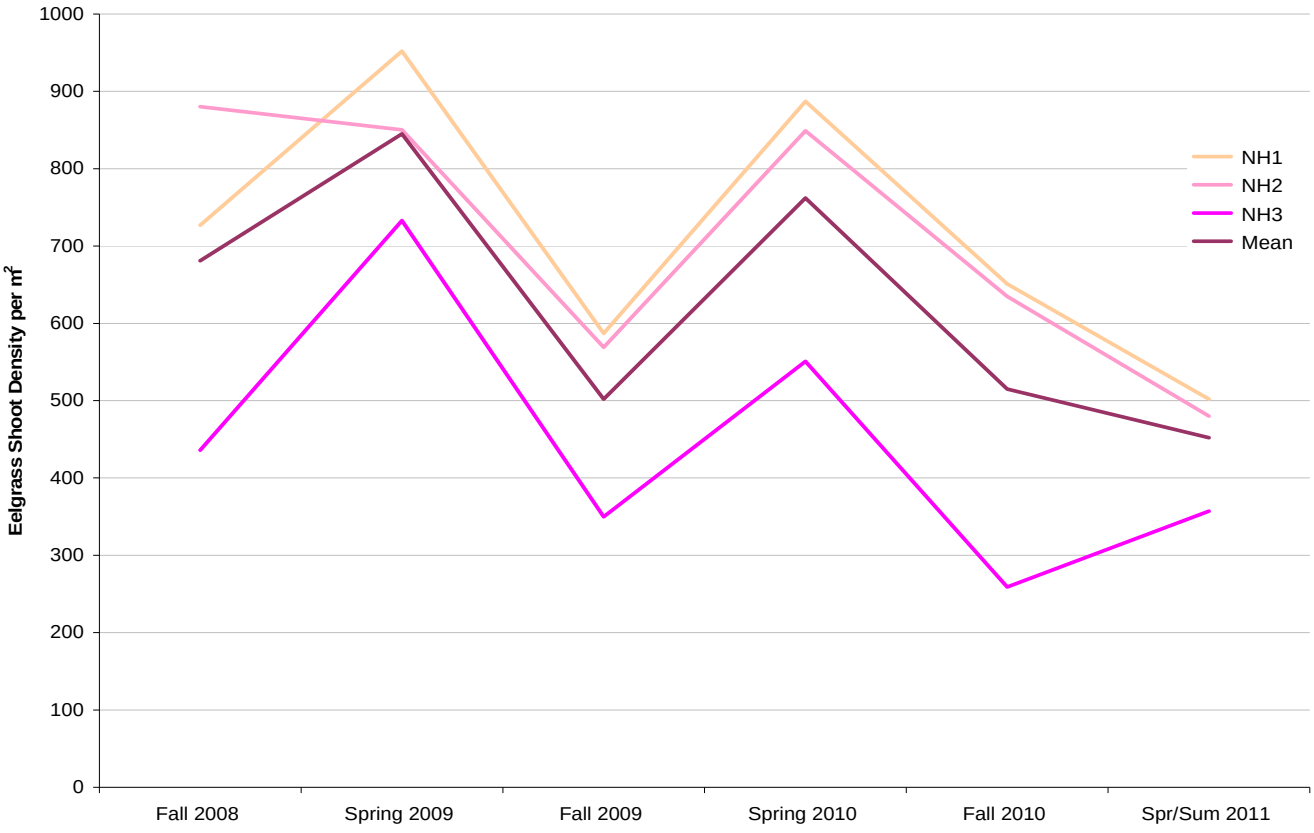
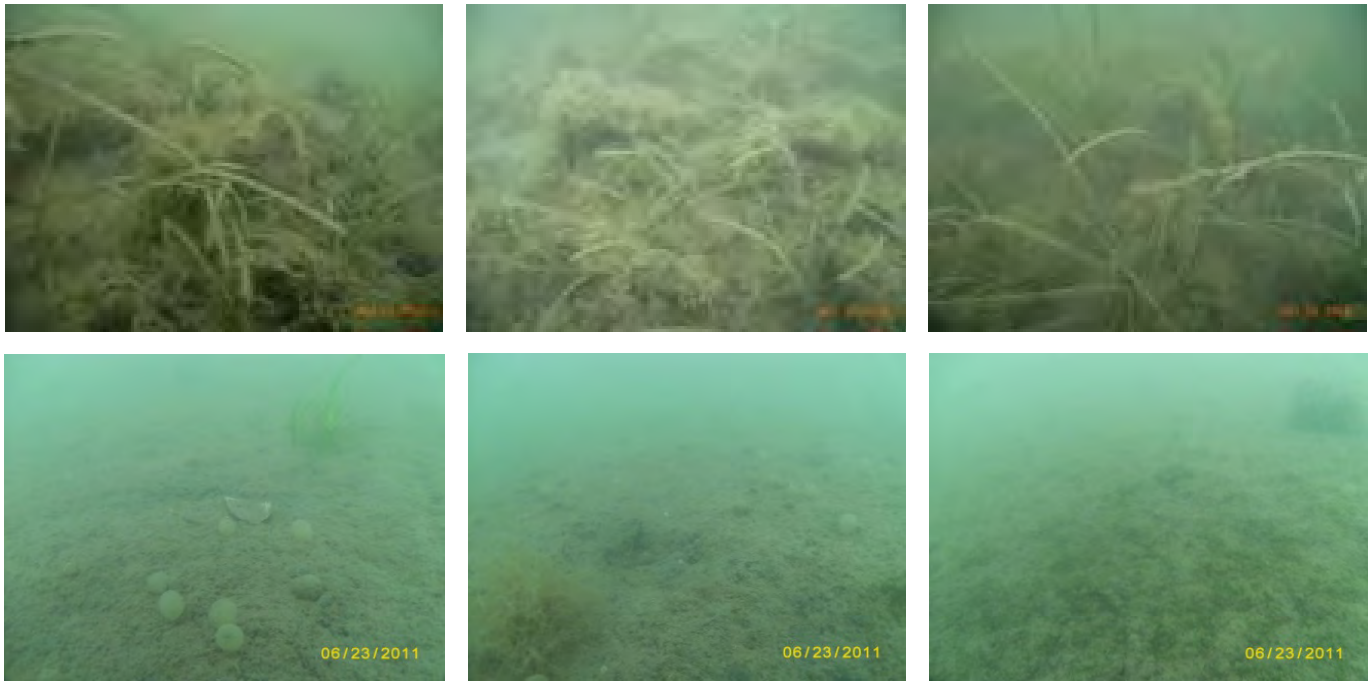



**Figure 15:** 2008-2011 Napeague Harbor eelgrass shoot density




**Hands Creek eelgrass survey stations 1, 2, and 3 during the Fall 2009 (top row) and Spring/Summer 2011(bottom row) survey periods; Photos courtesy of Cornell Cooperative Extension**


**Figure 16:** 2008-2011 Hands Creek eelgrass shoot density

## Novel methodologies to overwinter cultured hard clams in the Northeast U.S.: 2010-2012

The second year of a 2-year study

Participants

John Kraeuter, Haskin Shellfish Research Lab., Rutgers University
V. Monica Bricelj, Institute of Marine and Coastal Sciences, Rutgers University
Gef Flimlin, Cooperative Extension of Ocean County
Dr. Chester Zarnoch, Baruch College of CCNY
David Bushek, Haskin Shellfish Research Lab., Rutgers University
Brian Beal, Universtiy of Maine at Machias
George Mathis, Mathis Clam Farm
Joseph Porada, Egypt Bay Aquafarms
East Hampton Shellfish Hatchery

### *Project Objectives*

1. To determine whether techniques used to hold hard clam seed successfully over the winter in Maine can be applied to other locations in the Northeast region;
2. To examine survival of overwintered hard clam seed planted on farms at various locations in the Northeast region;
3. To examine temporal variation in overwinter success;
4. To assess the potential of cold shock in the mitigation of overwintering mortalities by enhancing thermotolerance.

### *Project Description*

This project will examine experimentally new overwintering technologies for cultured hard clam juveniles in ME, NY, and NJ. The new methodology is based on 12 years of successful overwintering of cultured juveniles of *Mya arenaria* in Maine. An initial overwintering trial with hard clam seed during the winter of 2006-2007 at the Downeast Institute (DEI), Beals, Maine resulted in >99% survival over 177-days. Subsequent monitoring of seed in protected field plots in eastern Maine indicated >80% survival for four months. Similar results have been found during winters of 2007-2008 and 2008-2009, thereby substantiating these preliminary results and warranting large-regional tests of this methodology. We propose two experimental field trials from Nov. 2009 to April 2010, and Nov 2010 to April 2011 in the three states to examine spatial and temporal variation in the new overwintering technique. Commercial quantities of local hard clam seed will be overwintered in each state, and overwintering seed in the other states. In each state, we will compare survival of overwintered seed using the new technique to survival of seed overwintered in protected field plots, as is the current, standard practice. In addition, we will follow the fate of local seed that survive the new overwintering methods in protected field plots in each state for six months. Biochemical assays will be conducted on clams from all size classes and origins at each field site overwintered using the new methodology to measure energy use through the overwintering period and to determine if the ME genetic stock is better adapted to temperature stress by using less energy stores. Simultaneously measuring biochemical composition and environmental parameters should also provide an understanding of how the various clam strains respond physiologically to the local conditions and culture methods.

East Hampton Shellfish Hatchery's role: industry participant, provider of New York seed

## New York State Department of State Environmental Protection Fund Grant: 2011-2013

Hard Clam and American Oyster Enhancement and Restoration in Three Mile, Napeague, and Accabonac Harbors

Participants
East Hampton Shellfish Hatchery
NYS Department of State

***Project Description***

The hatchery will grow and disseminate 1,000,000 American oysters and 2,000,000 hard clams to Three Mile and Napeague harbors and 500,000 American oysters and 1,000,000 hard clams to Accabonac harbor over the seasons 2011 and 2012. A portion of the crop will be overwintered in a waterbody within East Hampton Town from September to September each season and seeded following overwintering.

This project is funded in part by a grant awarded by the New York State Department of State with funds provided under Title 11 of the Environmental Protection Fund.

East Hampton Shellfish Hatchery's role: contractor

## Peconic Estuary Program Grant: 2012-2013

Hard Clam and American Oyster Enhancement and Restoration in Lake Montauk

Participants
East Hampton Shellfish Hatchery
Peconic Estuary Program/Suffolk County Department of Health Services

***Project Description***

The hatchery will grow and disseminate 500,000 American oysters and 1,000,000 hard clams to Lake Montauk over the seasons 2012 and 2013. A portion of the crop will be overwintered in a waterbody within East Hampton Town from September to September each season and seeded following overwintering.

This project is funded in part by the Peconic Estuary Program.

East Hampton Shellfish Hatchery's role: contractor

## Public Outreach

2011 community involvement and education

**Barley leading a group of kids from Project MOST into the water to teach them how to dig for clams**

- The annual *Shellfish Culture Workshop Series* continued for its 6th year
- Barley participated in the *Peconic Estuary Program's Natural Resources Subcommittee*
- Barley attended the *Springs Go Green Festival* in April where he displayed seeding maps, photos of hatchery activities, live shellfish, etc.
- Michael Karelis produced a short video of the hatchery for *Verizon Push-Pause TV*, see the video at http://www.yourpublicmedia.org/node/13664
- Barley had a radio interview with *National Public Radio's Faith Middleton Show* in June at Wolffer vineyard, hear the show at the following link: http://www.yourpublicmedia.org/node/13664
- In June we donated 8,610,000 eyed oyster larvae to *Project SERV*, a local non-profit organization centered around coastal ecosystem restoration through shellfish enhancement
- We lent a $CO_2$ regulator and timer to Dalton Brauer, a senior at *East Hampton High School*, for a small research project on the effects of ocean acidification on brittle stars and their ability to regenerate.
- In July, we hosted a *Sag Harbor/Pierson* life skills tour of the field site, facilitated by Diane Carillo, Career and Employment Options
- *Project MOST* field trips
    - July 21 clamming trip in Three Mile harbor
    - Oct. 21 seeding trip in Napeague harbor
- In September, Pete hosted a *South Fork Natural History Museum* tour of the field site
- As usual we attended the *East Hampton Trustees' Largest Clam Contest* in September where we discussed our work, answered questions from the public and held a clam counting contest, for which the Trustees supplied the prize.

## Infrastructure Management

General

- Built flask rack for drying and storage
- Applied “shellfish hatchery” lettering on small skiff, Dodge and F-250 trucks
- Labelled upwelling tanks at the Nursery
- Purchased welder which will allow us to repair trailers, fabricate other things for culture purposes
- Repainted both truck beds
- New seals on all saltwater pumps

**Paul constructing scallop spat collectors**

Boats

- Winterized outboards, small engines
- Bottom painted all wood and fiberglass boats
- New winch on aluminum boat trailer

Field Growout Related

- New chain on Napeague mooring line
- Built new barge workbox top due to one being lost in summer 2010 microsquall
- Fabricated fresh water catchment system on field barge

Montauk Facility

- Installed check valve at beginning of flex pipe coming out of pump house at Montauk facility, this alleviated the necessity to prime the pump each day
- Re-painted signage on front of building
- Connected algae air supply to main hatchery blower, this alleviated past issues of not having enough air for tubes, carboys in the algae room
- Re-painted broodstock tank stand and surrounding hallway
- Replaced broken tiles in lab
- Blackjacked hatchery and outback floor
- Repaired doghouse, it was blown off it’s foundation during winter storms
- Added two algae culture tubes to the algae room which allowed us to harvest one tube per day, thus increasing algae culture output by 14%
- Spun east set tanks around 180° in order to make better use of space in the hatchery
- Replaced baseboard and repainted the floor in the algae room

## **Appendix I: 2011 Harbor Seeding Maps – All Species**

Map 1: Three Mile Harbor
Map 2: Hog Creek
Map 3: Accabonac Harbor
Map 4: Napeague Harbor
Map 5: Lake Montauk
Map 6: All Harbors

CARTOGRAPHY - RONN PIRRELLI - 01/12

# THREE MILE HARBOR / 2011 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

- CLAMS: 1 y.o.'s 1,227,680 / 2 y.o.'s 142,756 (Avg. 18.0 mm)
- OYSTERS: 492,796 (Avg. 39.9 mm)
- SCALLOPS SPAWNER SANCTUARY: 151,200 (Avg. 33.8 mm)

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CARTOGRAPHY - RONN PIRRELLI - 01/12

# HOG CREEK / 2011 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

CLAMS: 40,110 (Avg. 14.6 mm)

OYSTERS: 34,740 (Avg. 37.5 mm)

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CARTOGRAPHY - RONN PIRRELLI - 01/12

# ACCABONAC HARBOR / 2011 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

CLAMS: 1 y.o.'s 853,752 (Avg. 10.4 mm) / 2 y.o.'s 149,424 (Avg. 16.0 mm)

OYSTERS: 322,607 (Avg. 41.6 mm)

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CARTOGRAPHY - RONN PIRRELLI - 01/12

# NAPEAGUE HARBOR / 2011 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

- CLAMS: 1 y.o.'s 975,384 (Avg. 11.5 mm) / 2 y.o.'s 259,183 (Avg. 20.3 mm)
- OYSTERS: 1 y.o.'s 575,805 (Avg. 35.6 mm) / 2 y.o.'s 25,830 (Avg. 45.0 mm)
- SCALLOPS SPAWNER SANCTUARY: 154,420 (Avg. 33.8 mm)
- SCALLOPS: 139,200 / OYSTERS: 55,218 OVERWINTERED

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CARTOGRAPHY - RONN PIRRELLI - 01/12

# LAKE MONTAUK / 2011 SEEDING


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

***KEY:***

CLAMS: 1 y.o.'s 868,768 (Avg. 9.8 mm) / 2 y.o.'s 221,500 (Avg. 14.5mm)

OYSTERS: 97,622 (Avg. 47.4 mm)

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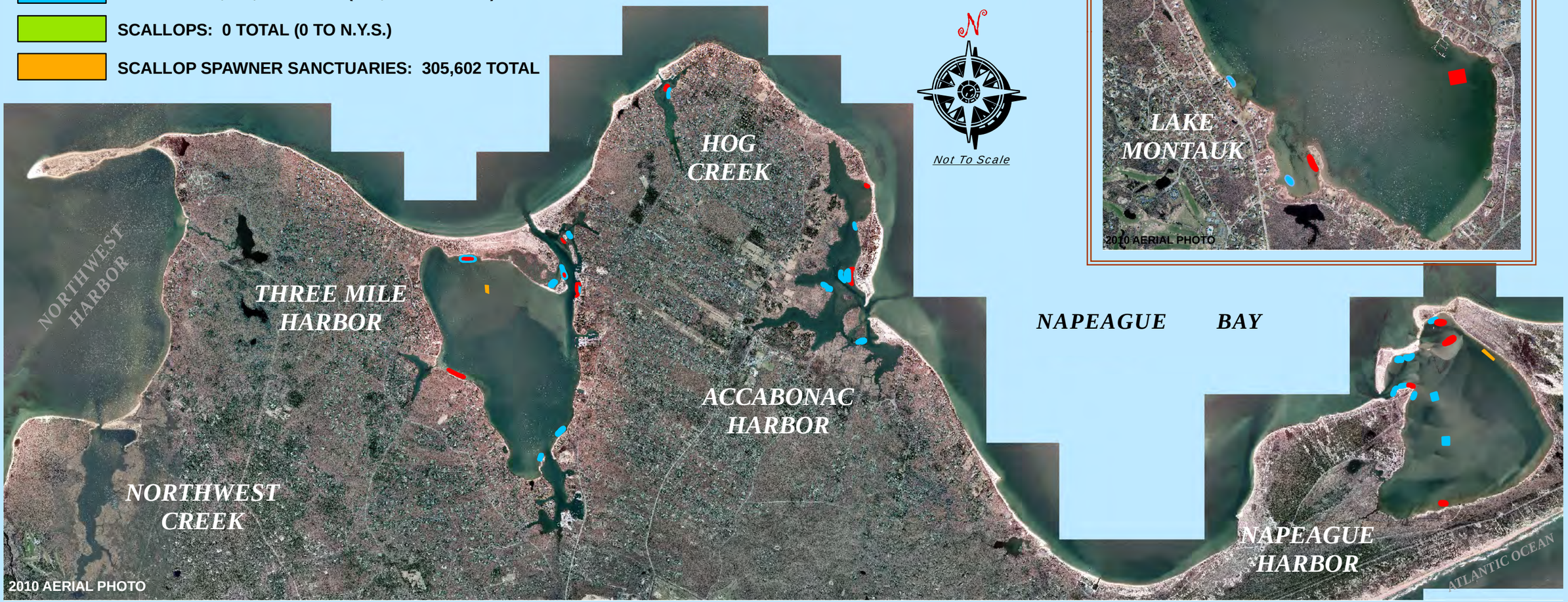
CARTOGRAPHY - RONN PIRRELLI - 01/12

# 2011 SEED PLACEMENT

***LEGEND***

- CLAMS: 5,858,941 TOTAL (0 TO N.Y.S.)
- OYSTERS: 2,163,402 TOTAL (558,748 TO N.Y.S.)
- SCALLOPS: 0 TOTAL (0 TO N.Y.S.)
- SCALLOP SPAWNER SANCTUARIES: 305,602 TOTAL

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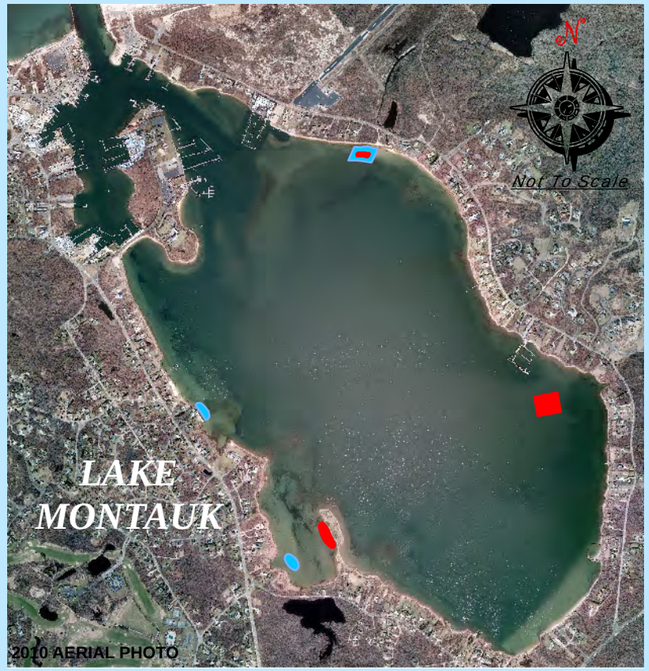


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Prepared By
THE TOWN OF EAST HAMPTON
Suffolk County, New York

## TOWN OF EAST HAMPTON

**Suffolk County, New York**

# SHELLFISH HATCHERY

Date Prepared: January 2012

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**<u>Appendix II</u>: 2011 Scallop Sanctuary and Spat Collection Site Maps**

Map 1: Three Mile Harbor
Map 2: Hog Creek
Map 3: Napeague Harbor

CARTOGRAPHY - RONN PIRRELLI - 1/12

# THREE MILE HARBOR

## 2011 Three Year Bay Scallop Restoration Program Evalution Sites


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

**LEGEND**

- Spat Collection Stations
- Eelgrass Evaluation Sites
- Spawner Sanctuaries
- Spawner Buffers
- Suggested 1 Acre Buffer
- Suggested 5 Acre Buffer

rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_10Three_Mile Harbor_Evaluation_Sites_11

CARTOGRAPHY - RONN PIRRELLI - 1/12

# HOG CREEK

## 2011 Three Year Bay Scallop Restoration Program Evalution Sites


EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

**LEGEND**

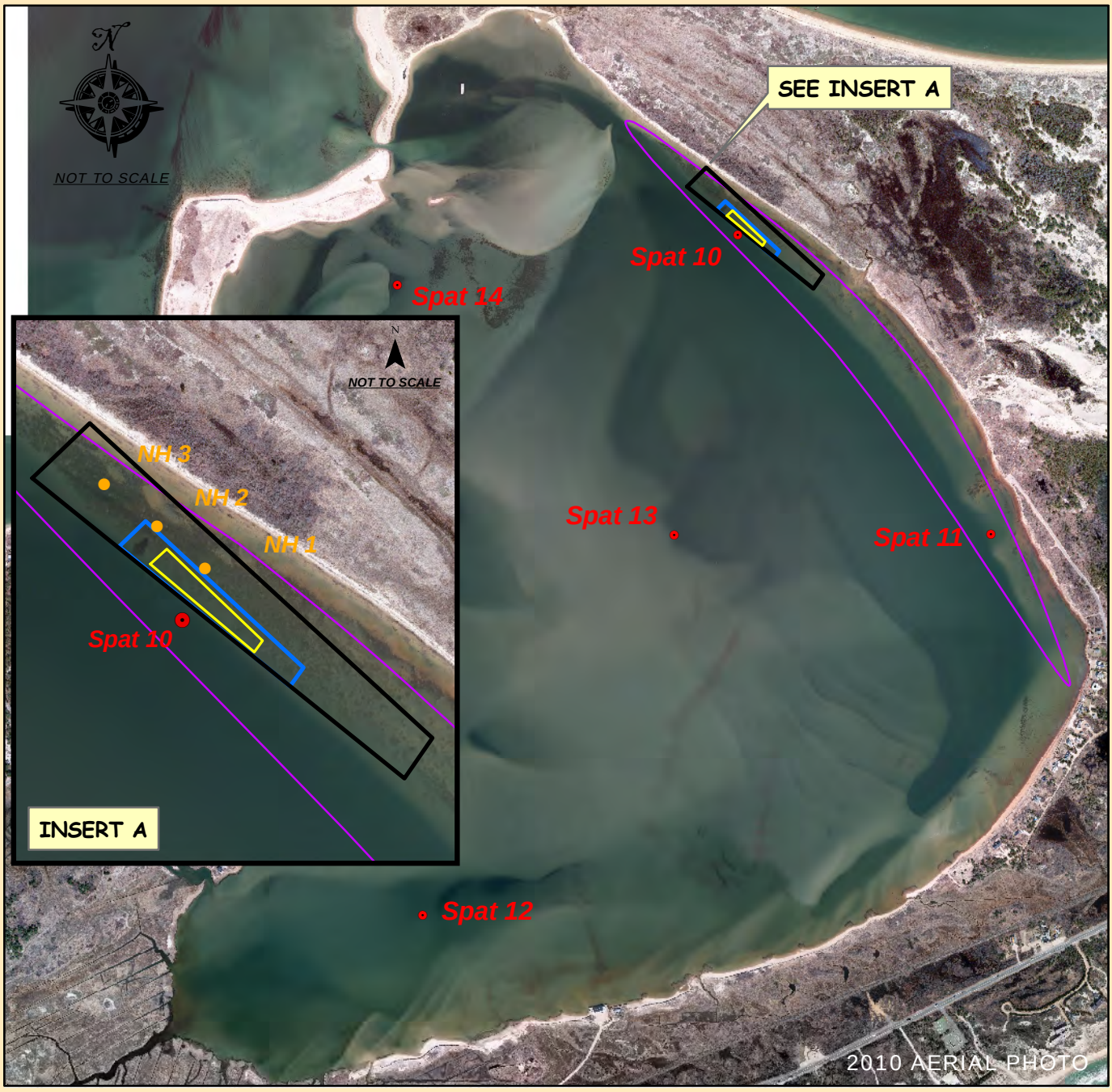
- Spat Collection Stations
- Eelgrass Evaluation Sites

rrpirrelli GIS-Projects\Aquaculture\Seed_Placement_11\Hog_Creek_Evaluation_Sites_11

CARTOGRAPHY - RONN PIRRELLI - 1/12

# NAPEAGUE HARBOR

## 2011 Three Year Bay Scallop Restoration Program Evalution Sites




EAST HAMPTON TOWN SHELLFISH HATCHERY

Prepared by
THE TOWN OF EAST HAMPTON
Suffolk County, New York

**LEGEND**

- Spat Collection Stations
- Spawner Sanctuaries
- Spawner Buffers
- Suggested 1 Acre Buffer
- Suggested 5 Acre Buffer
- Eelgrass Sanctuary
- Eelgrass Evaluation Sites

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## 2012 Operating Plan

**Bay scallops in the Napeague Harbor spawner sanctuary**

| | |
|---|---|
| Target Species: | Eastern Oyster (*Crassostrea virginica*)<br>Hard Clam (*Mercenaria mercenaria*)<br>Bay Scallop (*Argopecten irradians*) |
| Projected Production: | Oysters: 3-4 million<br>Clams: 5-7 million<br>Scallops: 350,000 |

Grant Projects:

*Three Year Extension of the Three Year Bay Scallop Restoration Project, 2011-2013*

- We were granted a three year extension on the Three Year Bay Scallop Restoration Project which is funded by Suffolk County and done in cooperation with the East Hampton Trustees. 2012 will be the second year of the three year extension.

*Hard Clam/American Oyster Enhancement/Restoration in Three Mile, Napeague, and Accabonac Harbors, 2011-2013*

- This project is funded by the New York State Department of State Environmental Protection Fund, 2012 is the second year of this project.

*Hard Clam/American Oyster Enhancement/Restoration in Lake Montauk, 2012*

- This project will be funded by the Peconic Estuary Program via the Suffolk County Health Department.

New projects: Conduct scallop larviculture at Gann Rd. nursery

Use rotary sieve on barge for sieving larger oysters to seed size.

Utilize 100 gallon aquarium in entryway to enhance visitors' experience and to learn more about local aquatic flora and fauna

Permit Status: All East Hampton Shellfish Hatchery marine hatchery and off bottom grow-out permits are in place for the 2012 season.

Additional Operating Requirements: Additional part-time assistance will be needed for the final year of the Three Year Bay Scallop Restoration Project.

# Introducing the 7th Annual East Hampton Town Shellfish Culture Workshop Series

***Saturday March 31, 2012, from 10 am to 12 pm at the Montauk Shellfish Hatchery:***
**#1: Shellfish Biology, Broodstock Conditioning and Algae Culture**

***Saturday May 12, 2012, from 10 am to 12 pm at the Montauk Shellfish Hatchery:***
**#2: Spawning and Hatchery Culture**

***Saturday June 23, 2012, from 10 am to 12 pm at the Commercial Dock Nursery, Gann Road, East Hampton:***
**#3: Nursery Culture**

**Saturday August 4, 2012, from 10 am to 12 pm at the Lazy Point Launching Ramp, Amagansett:***
**#4: Field Growout, Seeding and Experimentation**

**Saturday September 8, 2012, from 10 am to 12 pm at the Lazy Point Launching Ramp, Amagansett (adverse weather date 9/22, same time)***
**#5: Harvesting**

***Don't forget the East Hampton Trustees' Largest Clam Contest for great chowder and clams on the half shell. This event usually occurs around the last weekend in September.***

**Kids and young adults are welcome to participate!**
**Refreshments will be served & there is no fee for these workshops!**

**PLEASE E-MAIL: jdunne@ehamptonny.gov CALL THE HATCHERY: (668-4601)**
**OR THE INSTRUCTOR'S MOBILE PHONE: (816-3082)**
**FOR FURTHER INFORMATION OR TO SIGN UP FOR WORKSHOPS**
***These events will go on "rain or shine" – Please dress accordingly**